SWITZERLAND AT A GLANCE

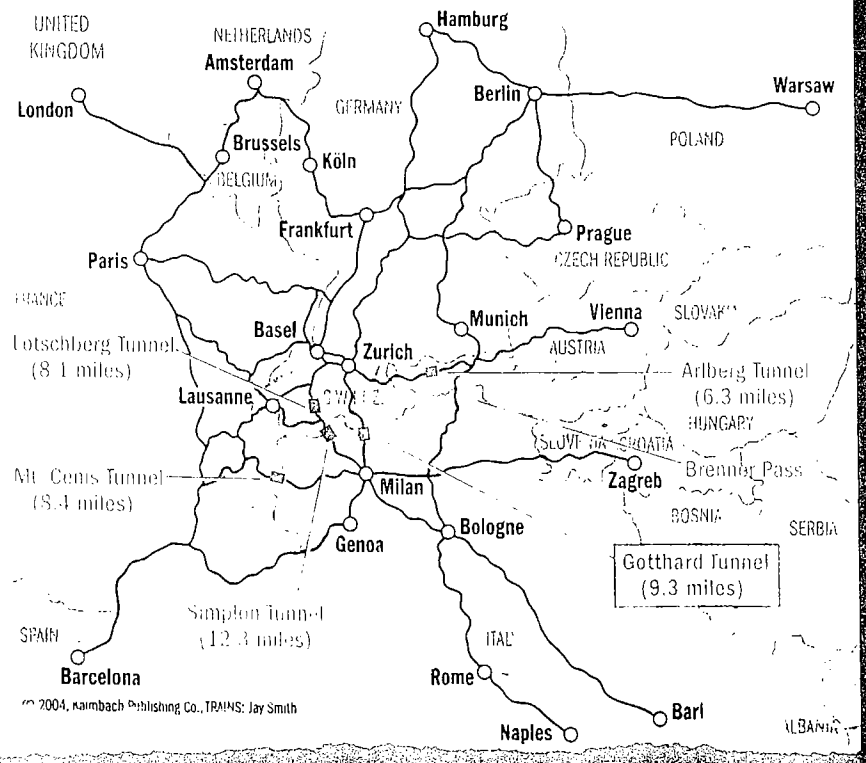
Freight crossing the Alps in 2001

	SWITZERLAND		AUSTRIA		FRANCE		TOTAL	
	million tons	%	million tons	%	million tons	%	million tons	%
Rail	22.8	67	17.3	28	10.4	19	50.5	33
Highway	11.4	33	45.3	72	43.8	81	100.5	67
Total	34.2	100	62.6	100	54.2	100	151.0	100

Source: Litra, Informationsdienst für den öffentlichen Verkehr, www.litra.ch

Engineer Karl Enz, in the cab of an Re 460 electric, takes an Intercity train over Gotthard.

Main trans-Alpine rail routes



Panoramic cars on SBB's Intercity trains let passengers take in the mountain scenery.

Switzerland transportation

POPULATION	
2002	7.2 Million

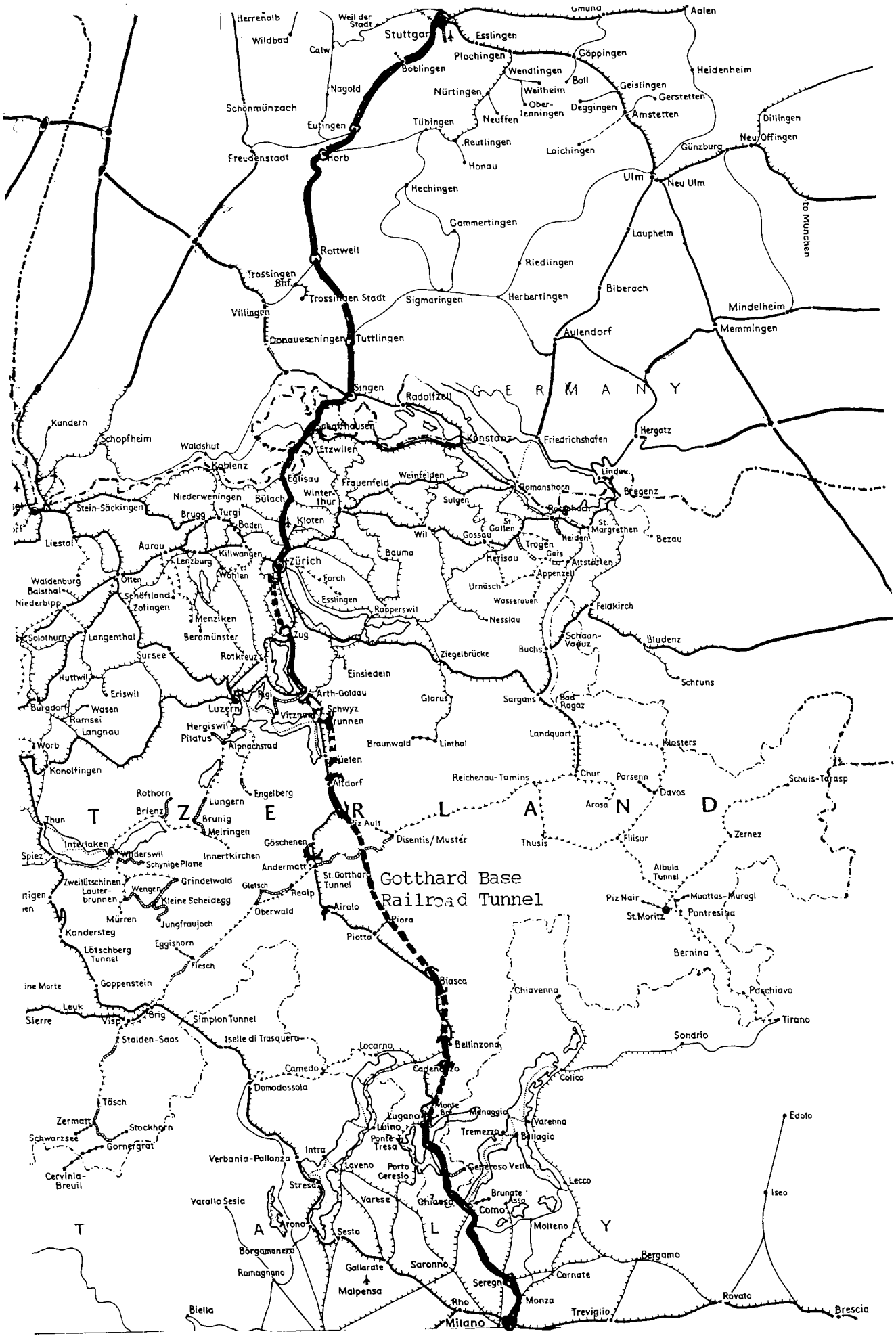
AVERAGE TRAIN JOURNEYS	
Per year/person	47
Average distance	26 miles

RAIL NETWORK	
Freight/passengers moved by rail in 2001 (ton-miles)	4.4 million
Standard gauge	2,269 miles
Narrow gauge	859 miles
Not electrified	less than 12 miles
Railway stations	1,842
Number of Tunnels	700
Total mileage in tunnels	245
Bridges	7,495
Total mileage on bridges	81
Track owned by:	
Swiss Federal Rys. (SBB)	1,868 miles
Bern-Lötschberg-Simplon	152 miles
Other track owners	49 private railways

HIGHWAYS	
Total length	44,118 miles
Autobahn 6 lanes	50 miles
Autobahn 4 lanes	738 miles
Autobahn 2 lanes	174 miles
Freight/passengers moved in 2001 (ton-miles)	14.1 million
Truck trips in Switzerland:	
Over Swiss Alps in 2003	1.29 million

Source: BAV, Bundesamt für Verkehr, www.bav.admin.ch

ROUTE LOCATION OF THE ST. GOTTHARD TUNNEL AND RAILROAD TRUCKWAY BETWEEN STUTTGART, GERMANY AND MILAN, ITALY THROUGH THE ALPS MOUNTAINS IN SWITZERLAND



NEWSPAPER ARTICLES

Metro News

California high-speed rail line would reduce congestion, boost economy, study says

A new environmental impact report states that a high-speed rail linking California's major cities would be less expensive and more environmentally friendly than building out highways and airports.

According to the 2,000-page document released Jan. 27 by the **California High-Speed Rail Authority** (CHSRA), as many as 68 million riders would use high-speed trains by 2020, significantly reducing congested freeways, improving air quality and boosting the state's economy.

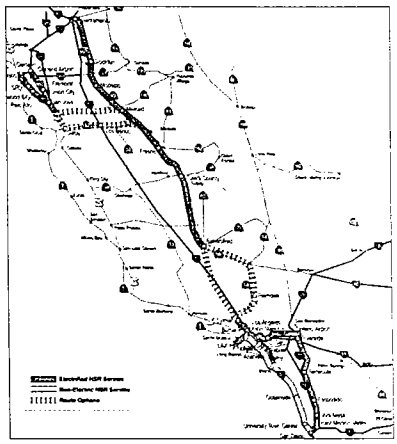
The report compares the 700-mile network option with two other scenarios. Under the first scenario, the state would only complete or build already approved transportation projects. The second one would opt for building more highways and airport gates at a cost of nearly $82 billion.

"The basic conclusion of this report is that the high-speed train is the best solution for California's intercity travel needs," CHSRA Executive Director **Mehdi Morshed** stated in a *Los Angeles Times* article.

The network would eventually link San Francisco, Sacramento, Fresno, Los Angeles and San Diego with trains reaching speeds up to 220 mph. At an estimated cost as high as $37 billion, the system is half as expensive as adding 2,970 miles of new highway lanes, nearly 60 airport gates and five runways.

However, the cost of the project has risen since 1999, when the high-speed rail authority estimated the bullet-train network at $25 billion.

The first leg of the route from Los Angeles to San Francisco could be funded through a $9.95 billion bond on the November ballot. But considering the state's budget deficit, Governor **Arnold Schwarzenegger** proposed to postpone the bond measure until 2006.



A proposed high-speed rail network would link San Francisco, Sacramento, Fresno, Los Angeles and San Diego with trains reaching speeds up to 220 mph.

B4 FRIDAY, MARCH 26, 2004 Los Angeles Times

MTA Backs a Bullet Train Route Through High Desert

By KURT STREETER
Times Staff Writer

The Metropolitan Transportation Authority decided Thursday to back a proposed high-speed rail route through the Antelope Valley.

The route is one of two options being studied by the California High-Speed Rail Authority, which is now nearing completion on a plan for a $37-billion electric-powered bullet train that would go from Los Angeles' Union Station to downtown San Francisco in two hours and 25 minutes.

The state-backed authority proposed two routes in an environmental review that was released in January and is to be completed during the next several months. One plan calls for a route between Bakersfield and Los Angeles that would run roughly parallel to the Golden State Freeway. Another option is to build tracks between Bakersfield and Los Angeles through the Antelope Valley, with a stop in Palmdale.

The cost would be about the same for either route. But travel time — the bullet train's prime selling point in what would likely be fierce competition with air travel — would probably increase on a trip from Los Angeles to San Francisco by at least 12 minutes if the train went through the Antelope Valley.

MTA officials said the time lost would be offset by making the train accessible Antelope Valley commuters..

A $10-billion bond measure allowing construction to begin on the project is set to be placed before voters statewide in November. But legislators and Gov. Arnold Schwarzenegger are working to move the measure to 2006 because of the budget crisis.

Panel wants Riverside County in on rail deal

DAVE DOWNEY
STAFF WRITER

RIVERSIDE — A regional panel Wednesday urged the state not to leave the high-speed train station without Riverside County.

Voting unanimously, the Riverside County Transportation Commission requested that the California High-Speed Rail Authority include the county in the first phase of the $37 billion, 700-mile statewide system, rather than relegate the area to a future expansion that may not take place.

The commission also endorsed the state's plans for stations at Escondido, San Diego, UC Riverside, March Air Reserve Base and the Interstates 15-215 interchange in Murrieta.

The panel, which allocates more than $100 million a year for local freeway, rail and bus projects, also endorsed an alignment of the high-speed rail project that would run from Ontario Airport to Colton, turning south along I-215 through Riverside to Murrieta and Temecula.

Those positions will be forwarded to the rail authority as it prepares to adopt a 2,000-page environmental impact report. Comments are being accepted through May 15.

"As voluminous as it is, it is still missing some material," said Carl Schiermeyer, longtime consultant to the commission.

Schiermeyer said it is clear that a $10 billion bond on the November ballot — at least for now — would fund a first phase defined as Los Angeles to San Francisco. But he said the report is not at all clear on when the section through Riverside County to San Diego would be built; it only suggests pumping extra money from fares into other parts of the system.

Making the picture even more fuzzy, the bond includes $1 billion for improvements to existing rail lines. And the line on the coast between Los Angeles and San Diego is expected to benefit widely from that pot, receiving money for tunnels, bridges and tracks, Schiermeyer said.

He warned that state politicians might abandon the inland alignment if they see that new high-speed rail between Los Angeles and San Francisco, coupled with improvements farther south, significantly shorten trips between Southern and Northern California.

A few years ago, state rail planners were debating whether to take the high-speed rail down the coast or through the rapidly developing I-15 corridor through Riverside County to San Diego. At that time, seaside cities rose up to protest a coastal high-speed line, saying it would ruin the picturesque and peaceful ambience of the beach.

Then, said Schiermeyer, "We stood up and said, 'We want it.'" And the rail agency designated the inland route through Riverside, Temecula and Escondido as the preferred one for reaching San Diego.

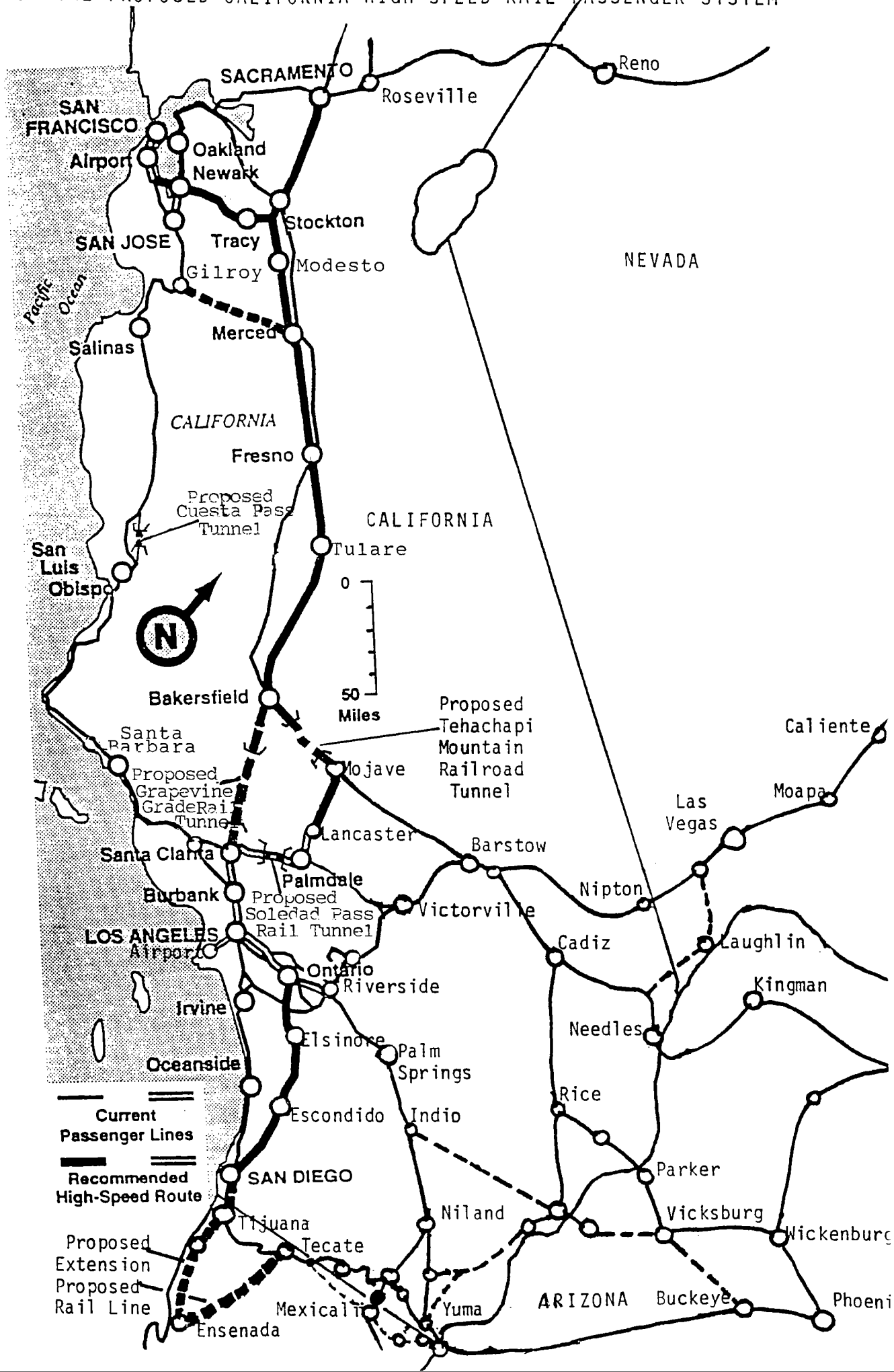
"But," he said, "they have never cut off the coast."

In other business, commissioners voted to create a public transit subcommittee upon the suggestion of an auditor.

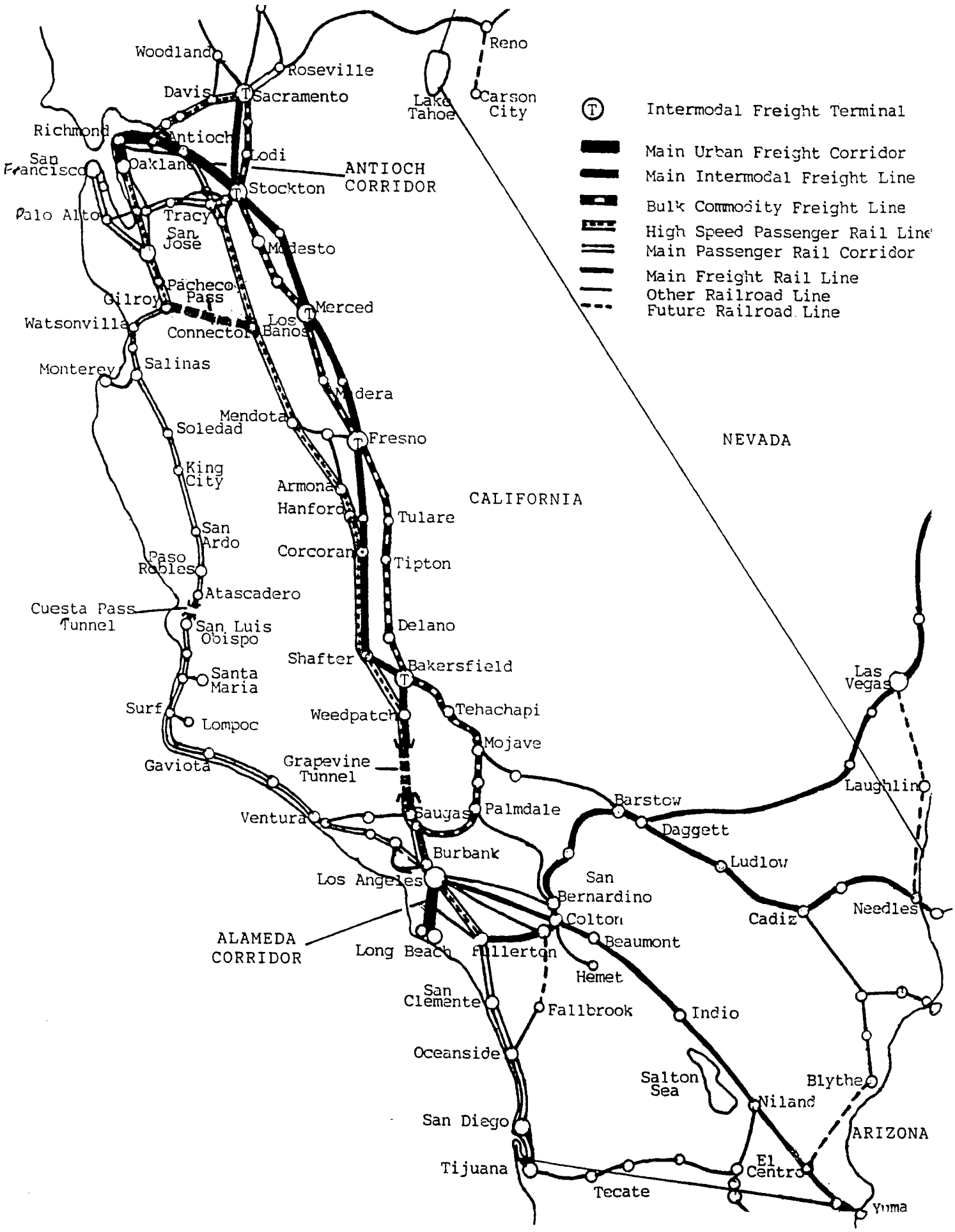
NORTH COUNTY TIMES

HIGH SPEED RAIL ROUTES

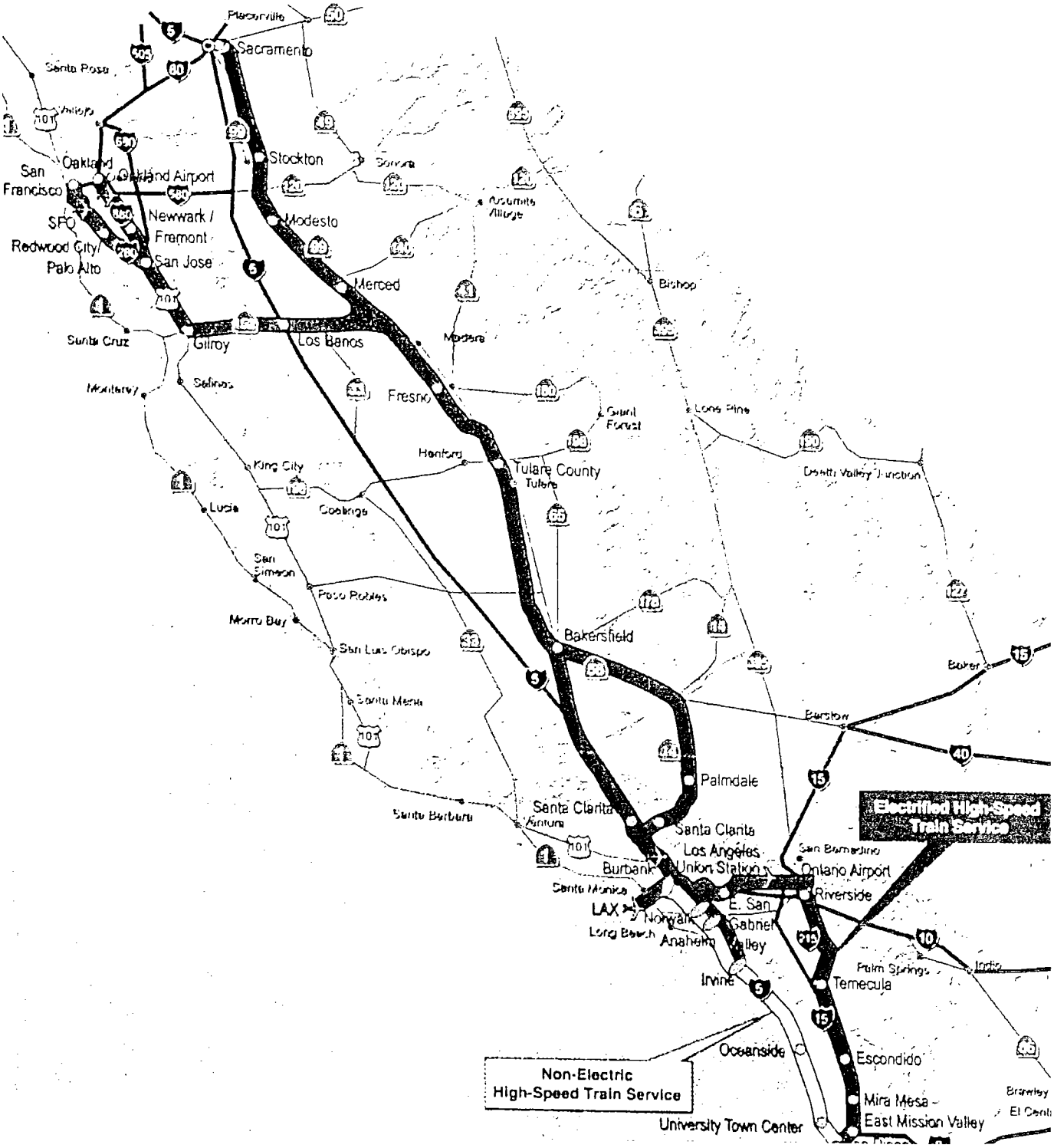
ROUTING FOR THE PROPOSED CALIFORNIA HIGH SPEED RAIL PASSENGER SYSTEM



LOCATION OF INTERMODAL FREIGHT TERMINALS IN THE SAN JOAQUIN VALLEY.

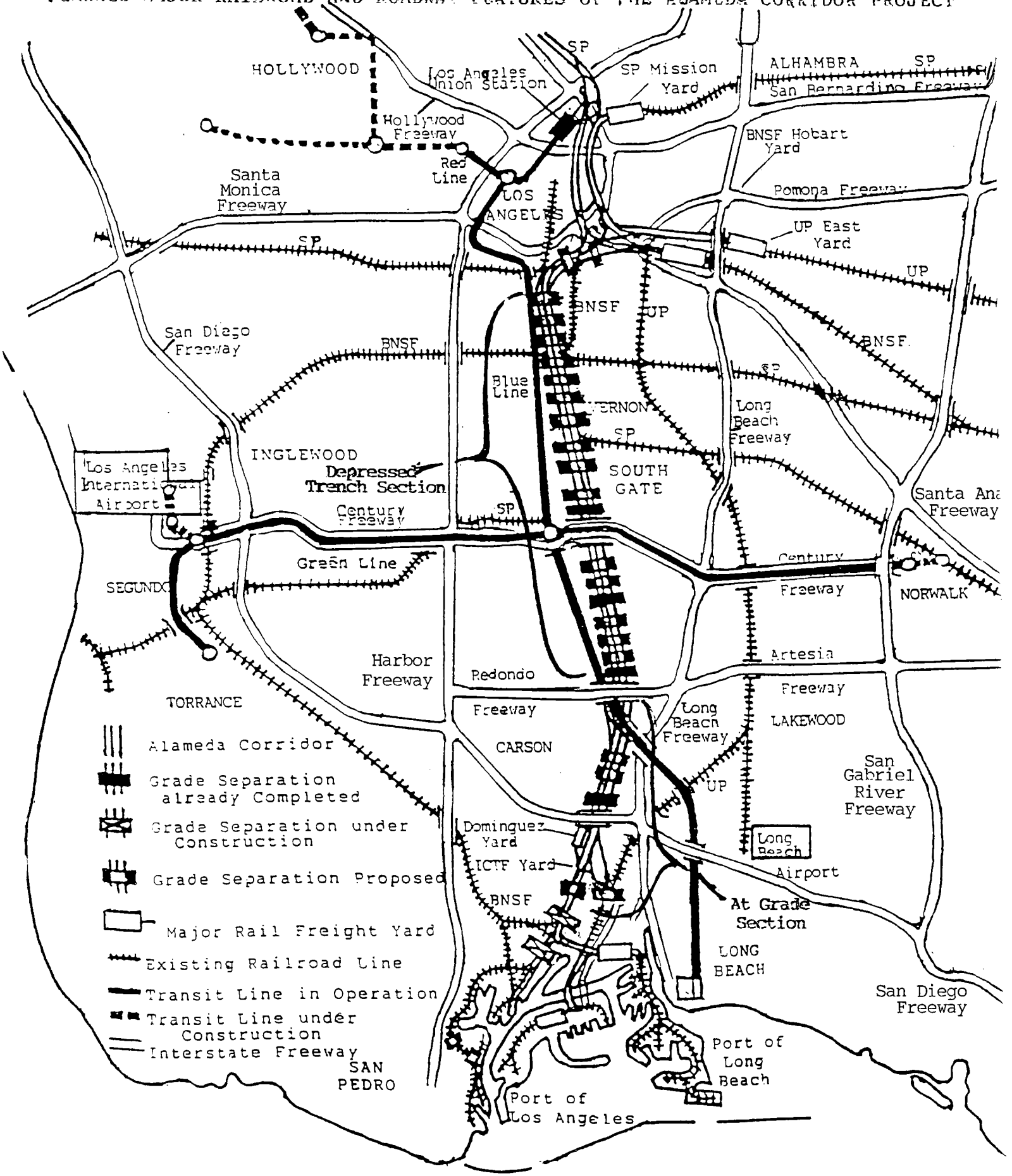


GENERAL PROPOSED ROUTE LOCATION FOR THE CALIFORNIA HIGH SPEED RAIL SYSTEM



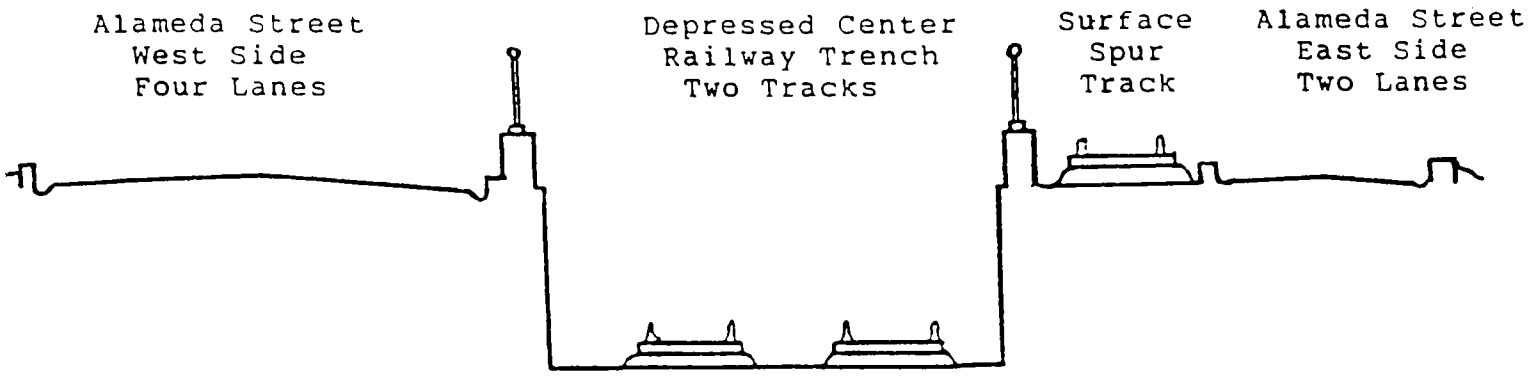
ALAMEDA CORRIDOR PROJECT

PLANNED MAJOR RAILROAD AND ROADWAY FEATURES OF THE ALAMEDA CORRIDOR PROJECT



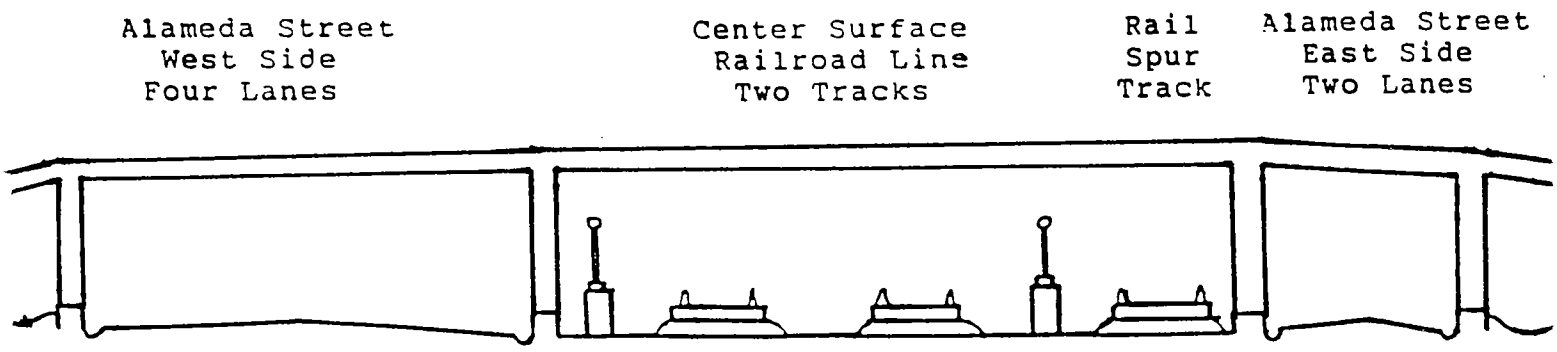
PROPOSED VERTICAL SECTION PROFILE FOR THE ALAMEDA CORRIDOR PROJECT

Depressed Railway Section



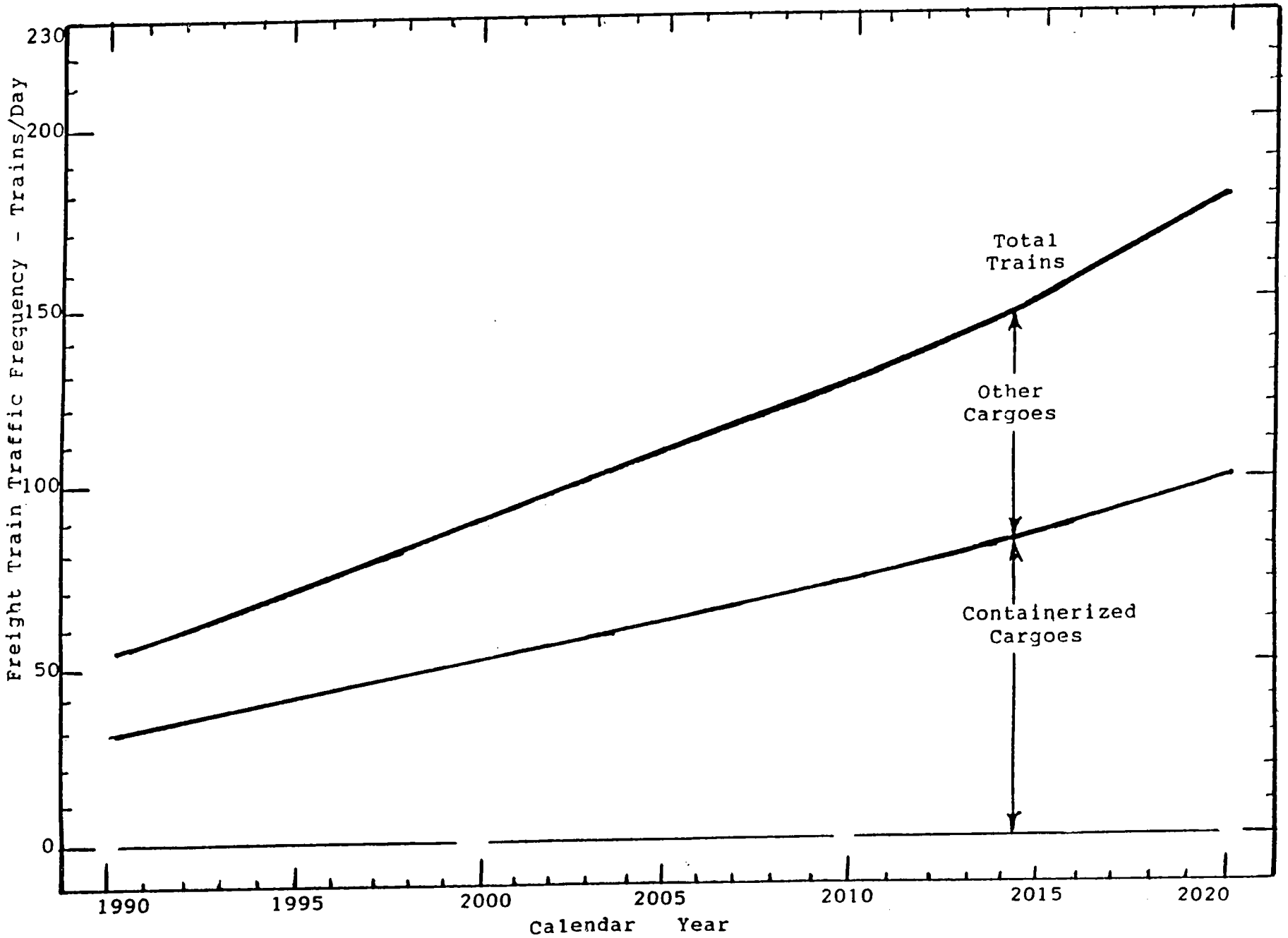
Artesia Freeway to
Washington Blvd.
(15 Miles)

At Grade Railway Section

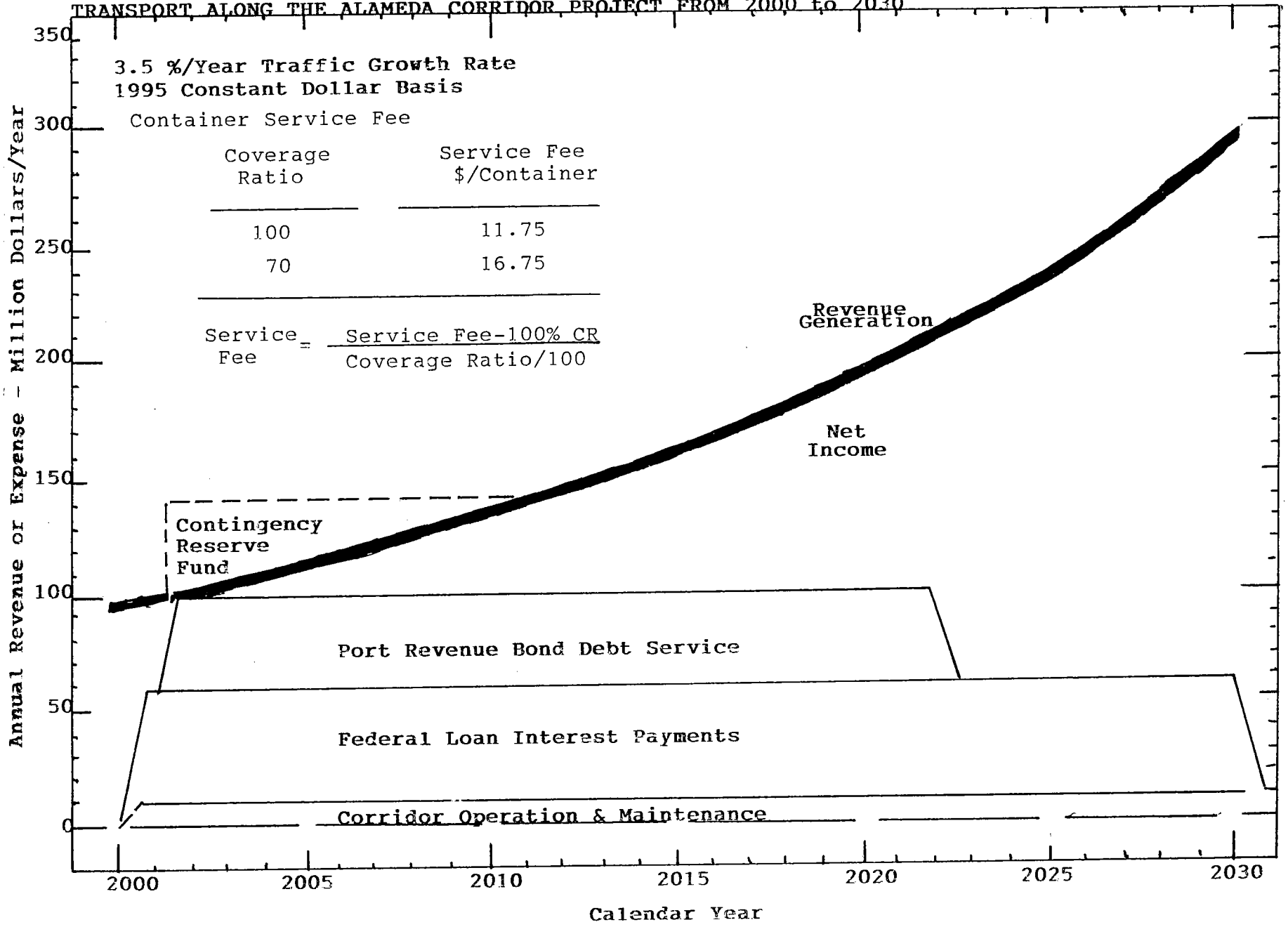


Terminal Island to
Artesia Freeway
(7 Miles)

EXPECTED INCREASES IN FREIGHT TRAIN MOVEMENTS ALONG THE ALAMEDA CORRIDOR: 1990-2020



PROJECTED INCREASES IN ANNUAL REVENUES AND DEBT SERVICE EXPENSES FOR CONTAINERIZED CARGO TRANSPORT ALONG THE ALAMEDA CORRIDOR PROJECT FROM 2000 to 2030



CAPITAL EXPENSE REQUIREMENTS AND OPERATING FEATURES OF THE ALAMEDA CORRIDOR PROJECT UNDER ALTERNATIVE CONFIGURATIONS[1]

SPECIFIC PARAMETER	FUNDING SOURCE	BASE CASE SINGLE TRACK EXISTING	DOUBLE TRACK WITH NO SEPARATIONS	DOUBLE TRACK WITH SEPARATIONS
Capital Cost (Million $)	Port Contributions	400.00	400.00	400.00
	Port Revenue Bonds	0.0	600.0	600.0
	State and Local Funds MTA Contributions	0.0 0.0	143.0 0.0	143.0 350.0
	Federal Funds	0.0	0.0	400.0
	Total Expense	400.0	1,143.0	1,893.0
	Unit Cost (Million $/Mile)	18.2	52.0	86.0
	Railroad Expense[3]	0.0	25.0	50.0
Railroad Features	Number of Tracks	1	2	2
	Grade Crossings	31	28	0
	Grade Separations	7	10	39
	Average Train Speed (Mile/Hour)	20	35	40
	Track Capacity (Trains/Day)	40	100	150
	Transit Time (Hours)	4	2	1
	Year Completed	-	2005	2001
	Route Length (Miles)	22	22	22
	Signaling System	ABS	CTC	CTC ATC

Notes:

1. Capital cost factors are based on 1995 constant dollars.
2. Abbreviations for signaling systems are as follows:
   ABS=Automatic Block Signals;
   ATC=Automatic Train Control;
   CTC=Centralized Traffic Control.
3. Estimated signalling and communication system cost to be paid for separately by the freight railroads.

EXPECTED PRESENT AND FUTURE ECONOMIC IMPACTS RESULTING FROM THE DEVELOPMENT OF THE PROPOSED DUWAMISH CORRIDOR PROJECT IN THE PUGET SOUND AREA

IMPACT	UNITS	1995	2010	2020
Value of Trade	Billion $/Year	60	100	150
Direct Employment	No. of Jobs	30,000	50,000	70,000
Area Employment	No. of Jobs	120,000	180,000	240,000
Statewide Employment	No. of Jobs	600,000	1,000,000	1,500,000
Direct Payrolls	Million $/Year	530	880	1,230
Econo Business Revenues	Billion $/Year	3	6	10
Port Revenues	Billion $/Year	5	8	12
Economic Activity		10	20	35
Federal Income Tax	Billion $/Year	1.1	1.9	2.7
Federal Customs duties	Million $/Year	560	900	1,250
State & Local Taxes	Million $/Year	170	260	340
Trade Volume	Million Metric Tons/Year	37	75	100
Container Shipments	Million TEU/Year	3	7	10
Total Train Movements	Trains/Day	90	320	440

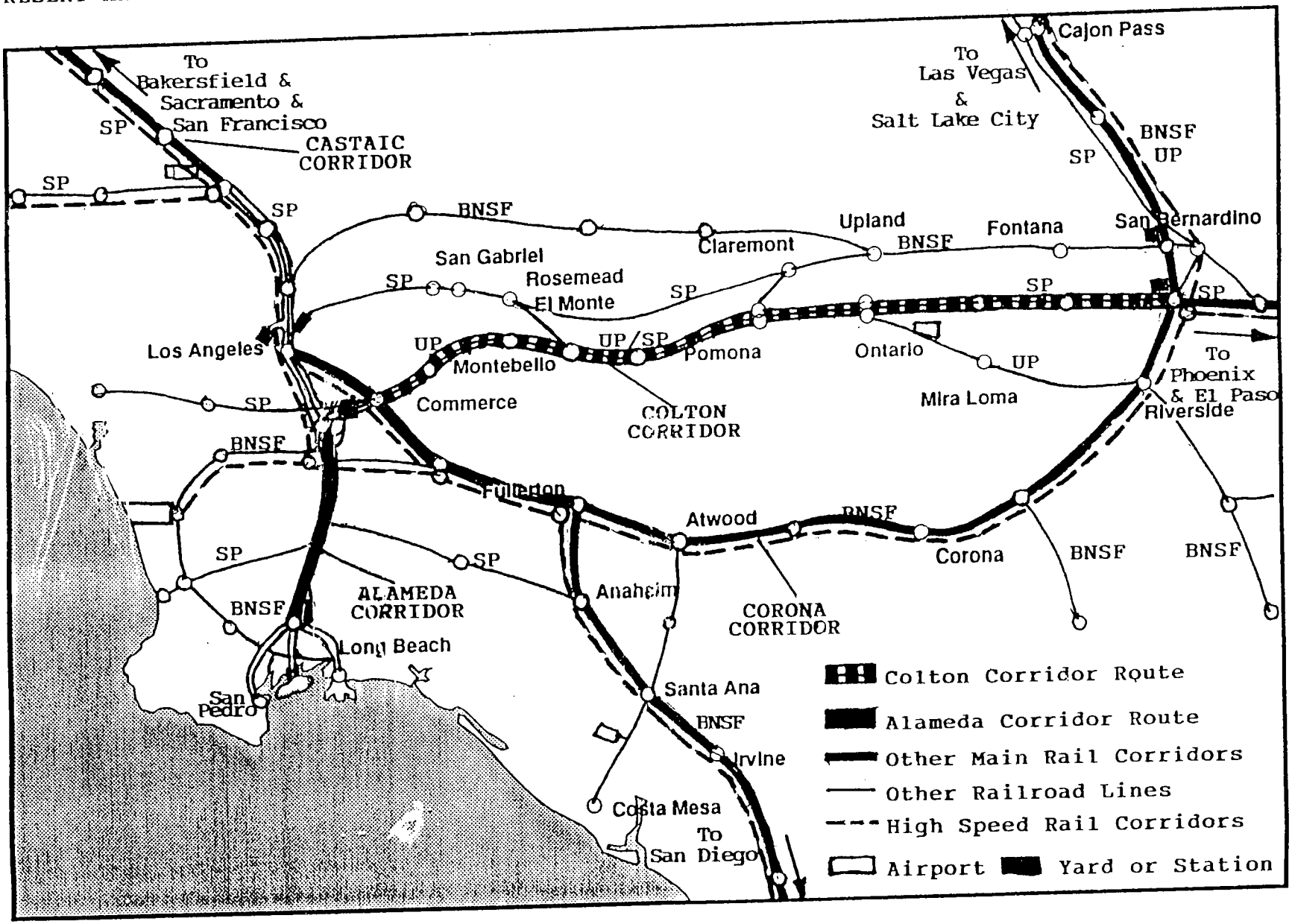
EXPECTED PRESENT AND FUTURE ECONOMIC IMPACTS RESULTING FROM THE DEVELOPMENT OF THE ALAMEDA CORRIDOR PROJECT IN THE SOUTHERN CALIFORNIA REGION

IMPACT	UNITS	1995	2010	2020
Value of Trade	Billion $ Year	116.0	253.0	355.0
Direct Employment	No. of Jobs	30,000	70,000	100,000
Total Employment	No. of Jobs	75,000	180,000	250,000
National Employment	No. of Jobs	2,500,000	5,700,000	8,000,000
Affected Payrolls	Billion $ Year	100.0	230.0	325.0
Federal Income Tax	Billion $ Year	14.2	30.9	95.5
Federal Customs Duties	Billion $ Year	2.9	5.9	8.4
State & Local Taxes	Billion $ Year	5.4	11.6	16.5
Trade Volume	Million Metric Tons/Year	120	180	235
Container Shipments	Million TEU/Year	5	12	17
Total Train Movements	Trains/Day	255	510	710

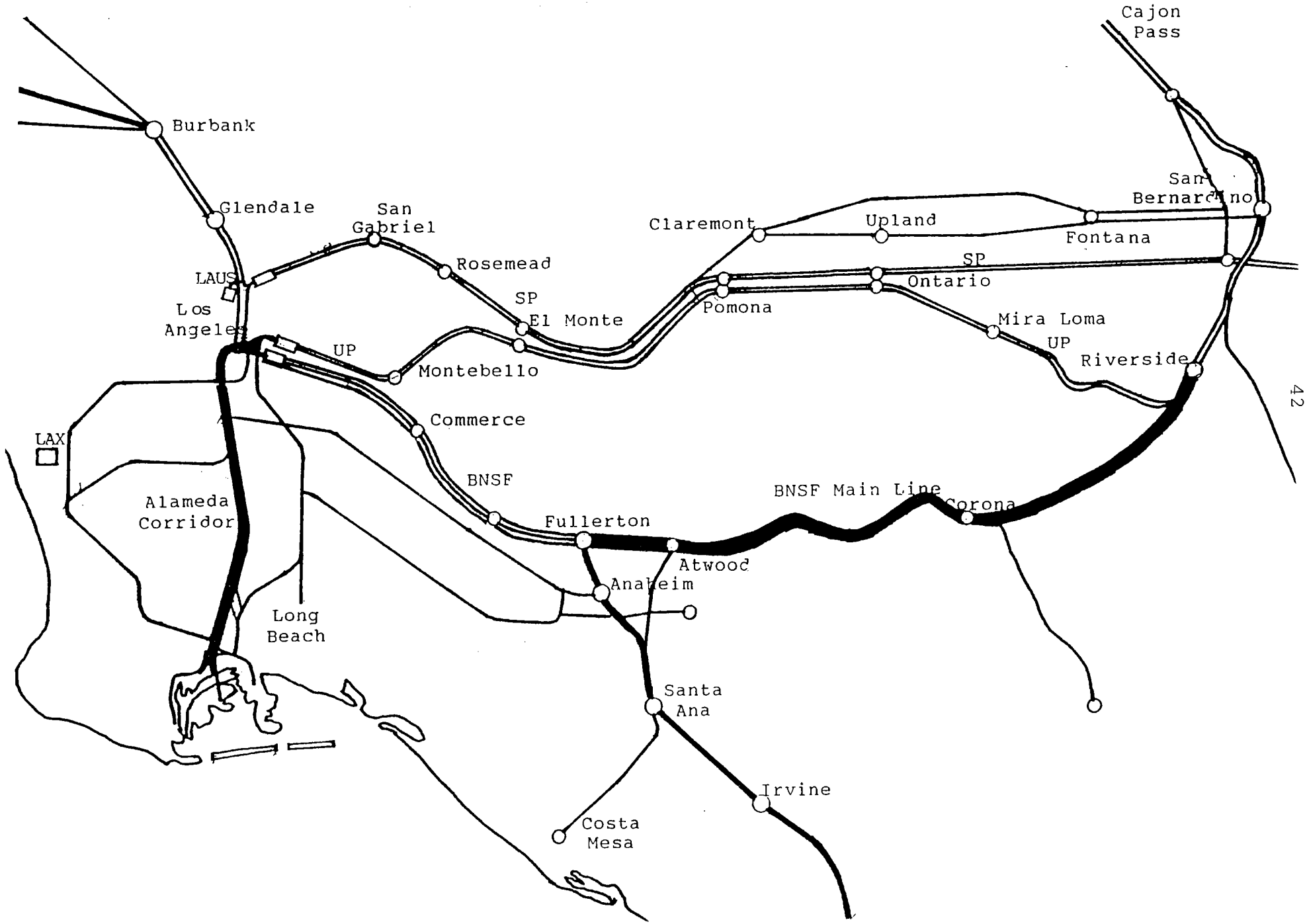
SOUTHERN CALIFORNIA

RAILROAD NETWORKS

PRESENT AND FUTURE FREIGHT AND PASSENGER RAILROAD LINE CORRIDORS IN THE LOS ANGELES BASIN.



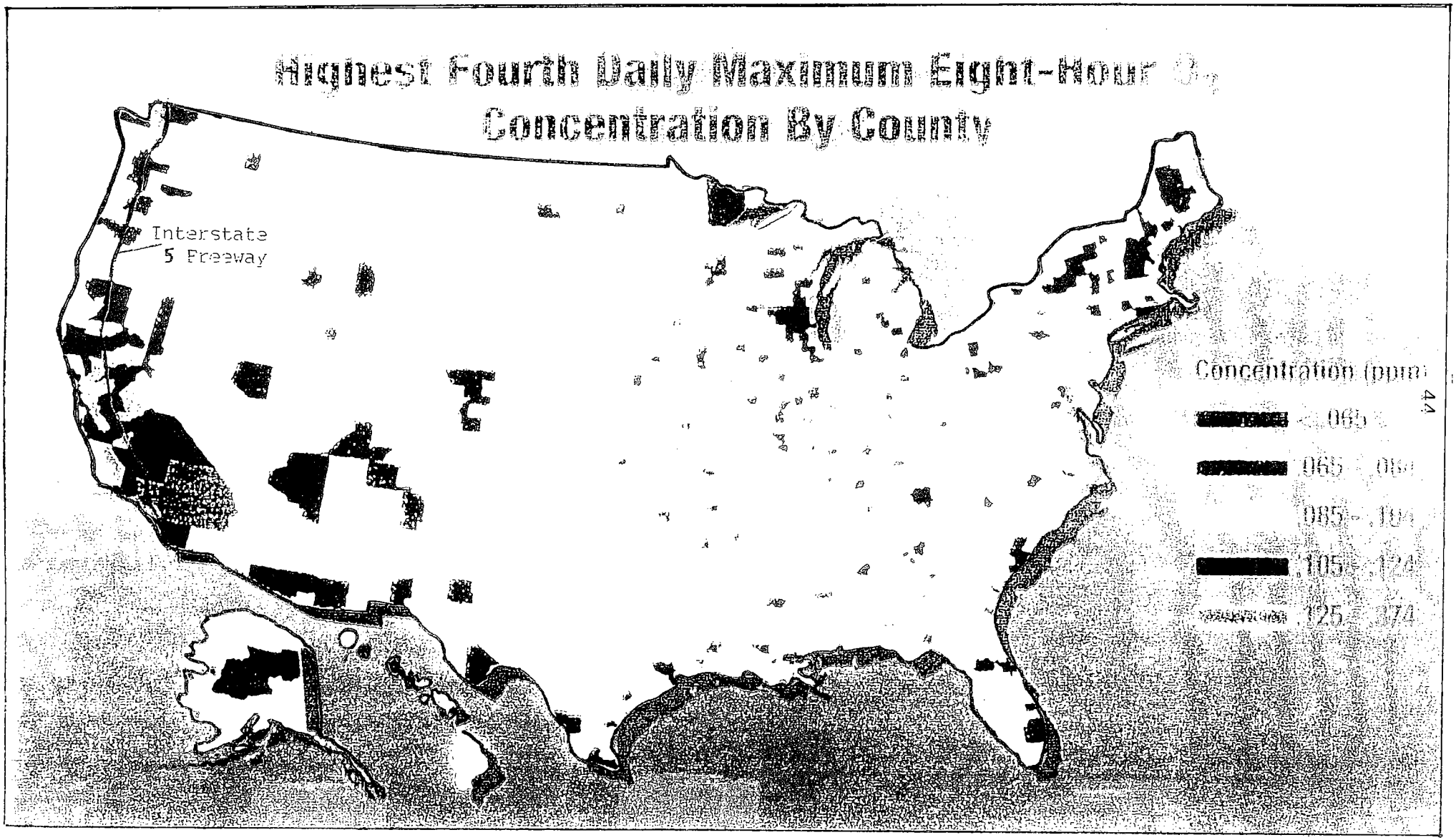
TRIPLE TRACKING EXPANSION OF THE BNSF MAIN RAILROAD LINE FROM FULLERTON TO RIVERSIDE



OZONE AIR QUALITY

NONATTAINMENT AREAS

OBSERVED VALUES FOR THE FOURTH HIGHEST AMBIENT AIR QUALITY READINGS FOR ATMOSPHERIC OZONE LEVELS ACROSS THE UNITED STATES AND ALONG THE INTERSTATE 5 FREEWAY CORRIDOR STATES IN 1998

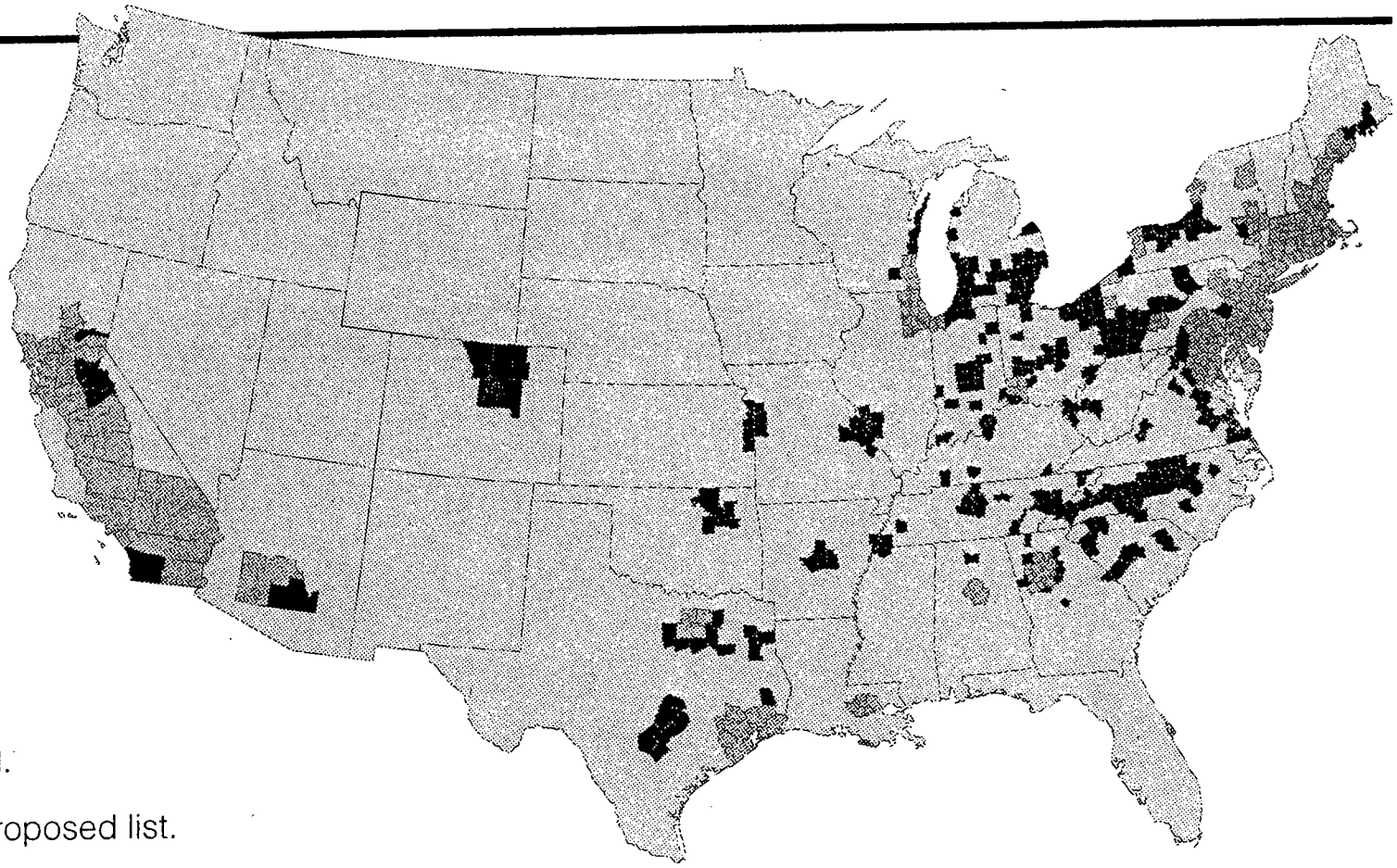


Fourth Highest Maximum Eight Hour Ozone Ambient Air Concentrations during 1998 from the National Air Quality and Emissions Trends Report: 1998. These Areas shown in Color could be Redesignated as Being in Nonattainment by the U.S. Environmental Protection Agency.

COUNTIES IN THE UNITED STATES IN VIOLATION OF THE NEW FEDERAL OZONE AIR QUALITY STANDARD

Polluted Air

When the Environmental Protection Agency announces tighter ozone exposure rules on Thursday, about 500 counties will be in violation of or contribute to violation of new federal clean air standards. Counties shown are on the E.P.A.'s proposed list from December.



Ozone Limit - 0.085 ppm

Counties previously listed.

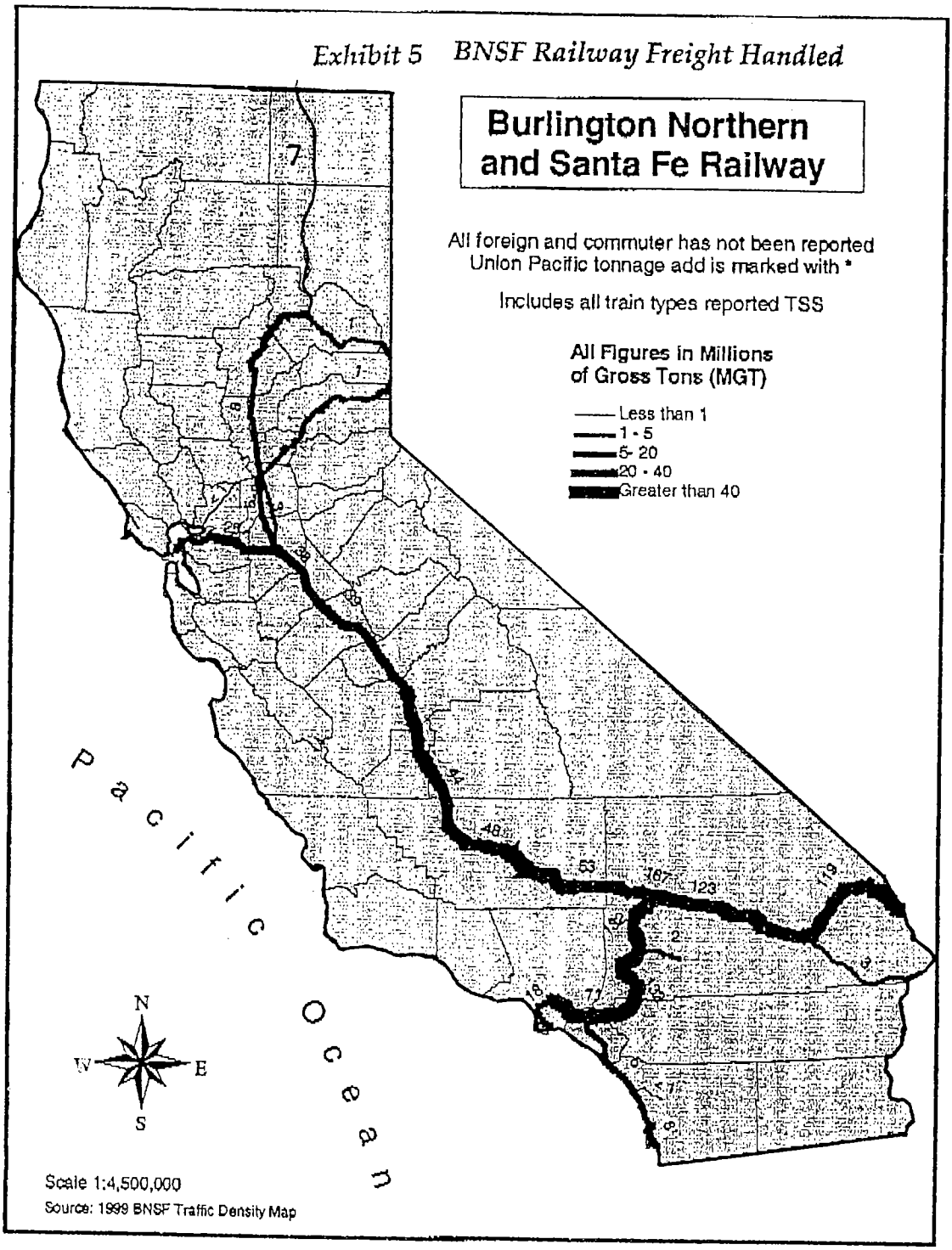
Counties added on the proposed list.

The New York Time

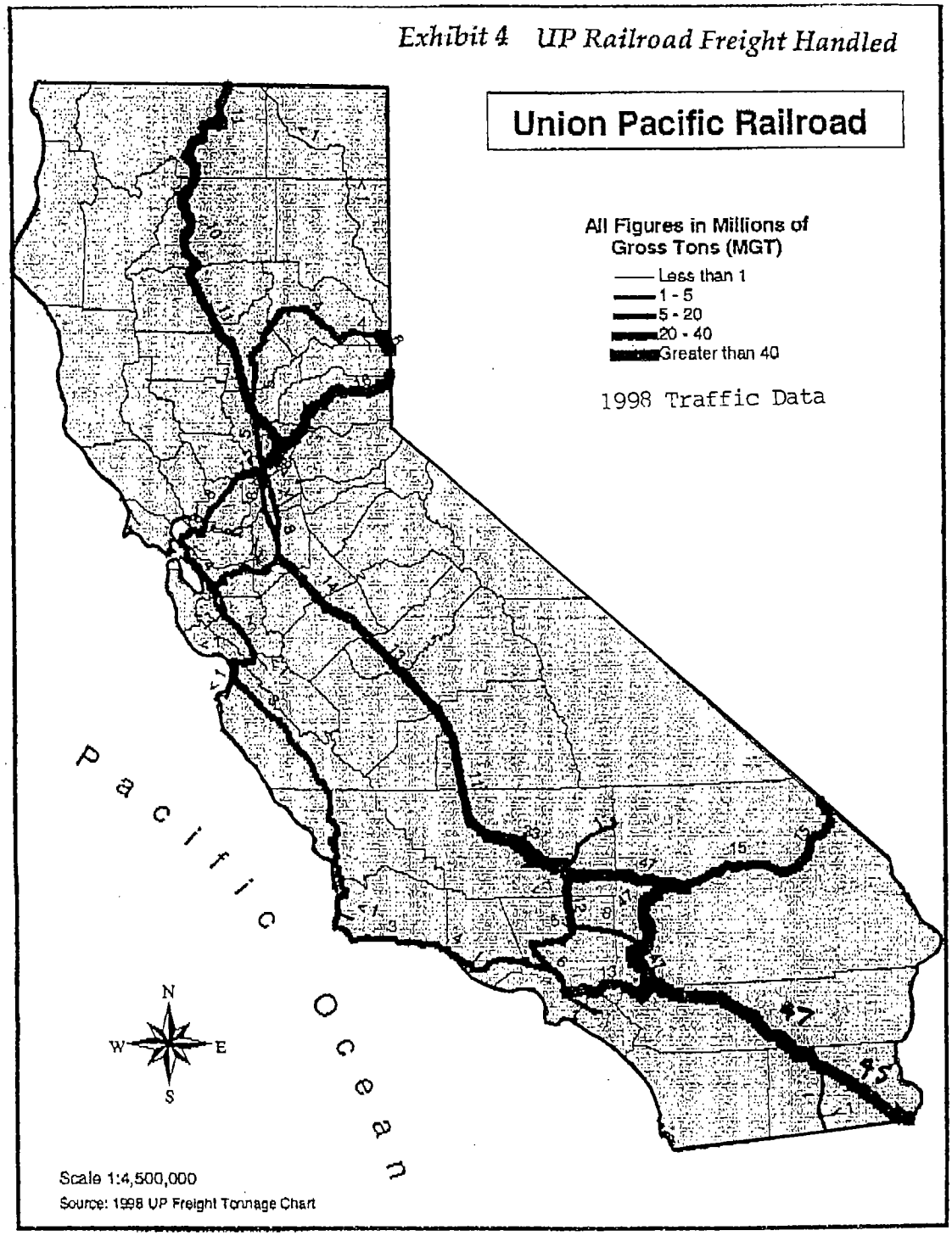
CALIFORNIA RAILROAD

FREIGHT TRAFFIC FLOWS

EXISTING FREIGHT TRAFFIC DENSITIES ON THE RAIL LINES OF THE BURLINGTON NORTHERN SANTA FE RAILROAD IN CALIFORNIA IN 1999



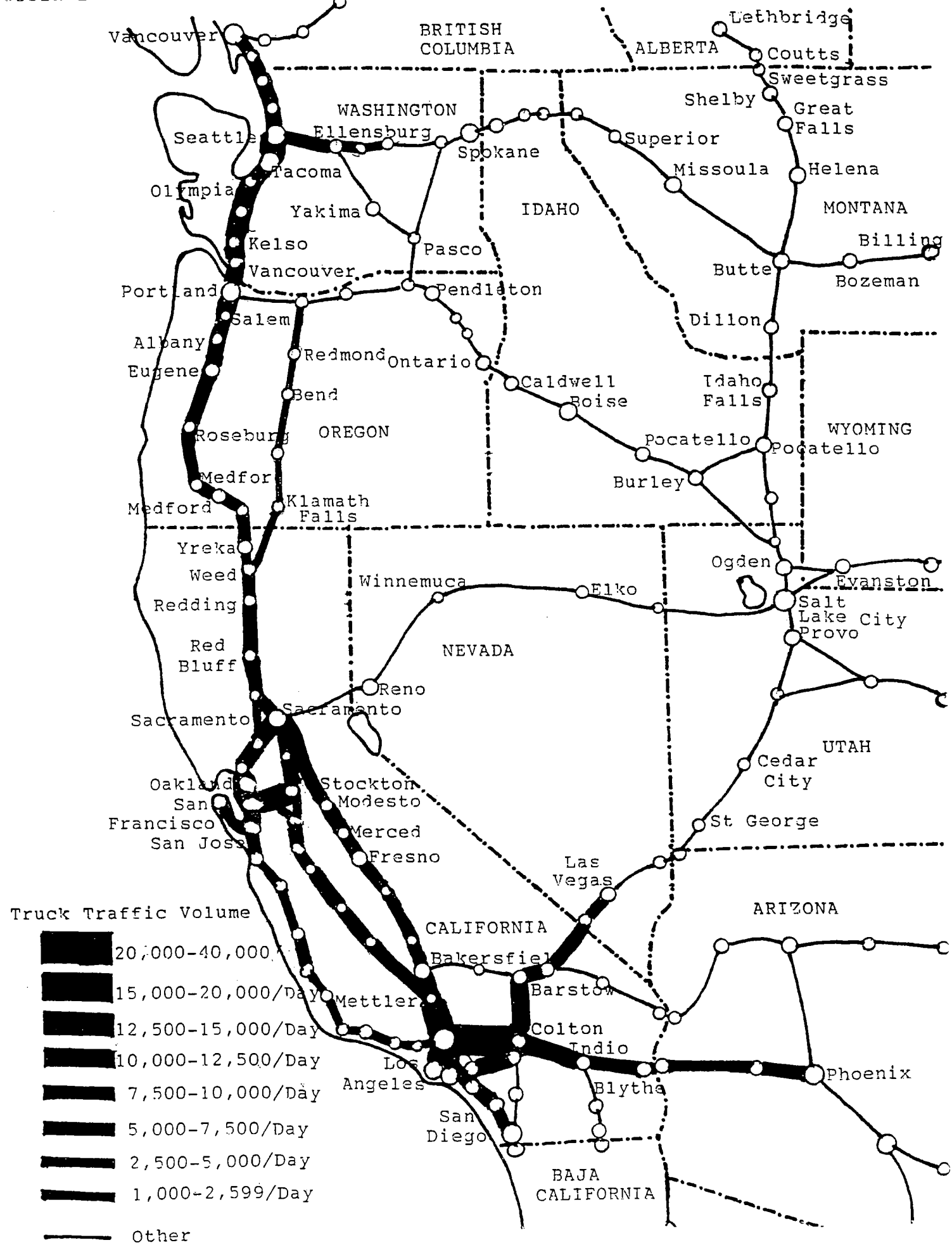
EXISTING FREIGHT TRAFFIC DENSITIES ON THE RAIL LINES OF THE UNION PACIFIC RAILROAD IN THE STATE OF CALIFORNIA FOR THE YEAR 1998

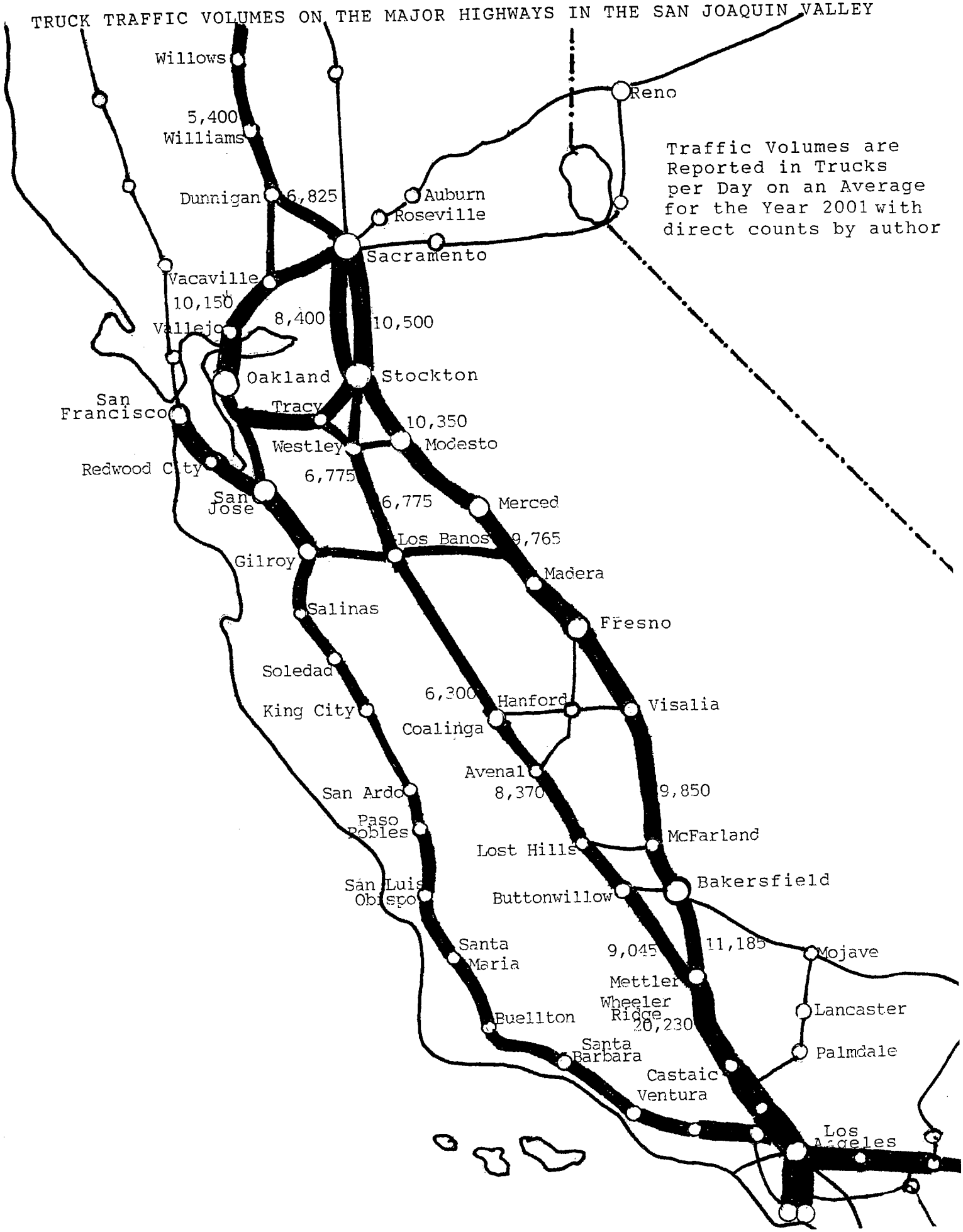


HIGHWAY TRUCK

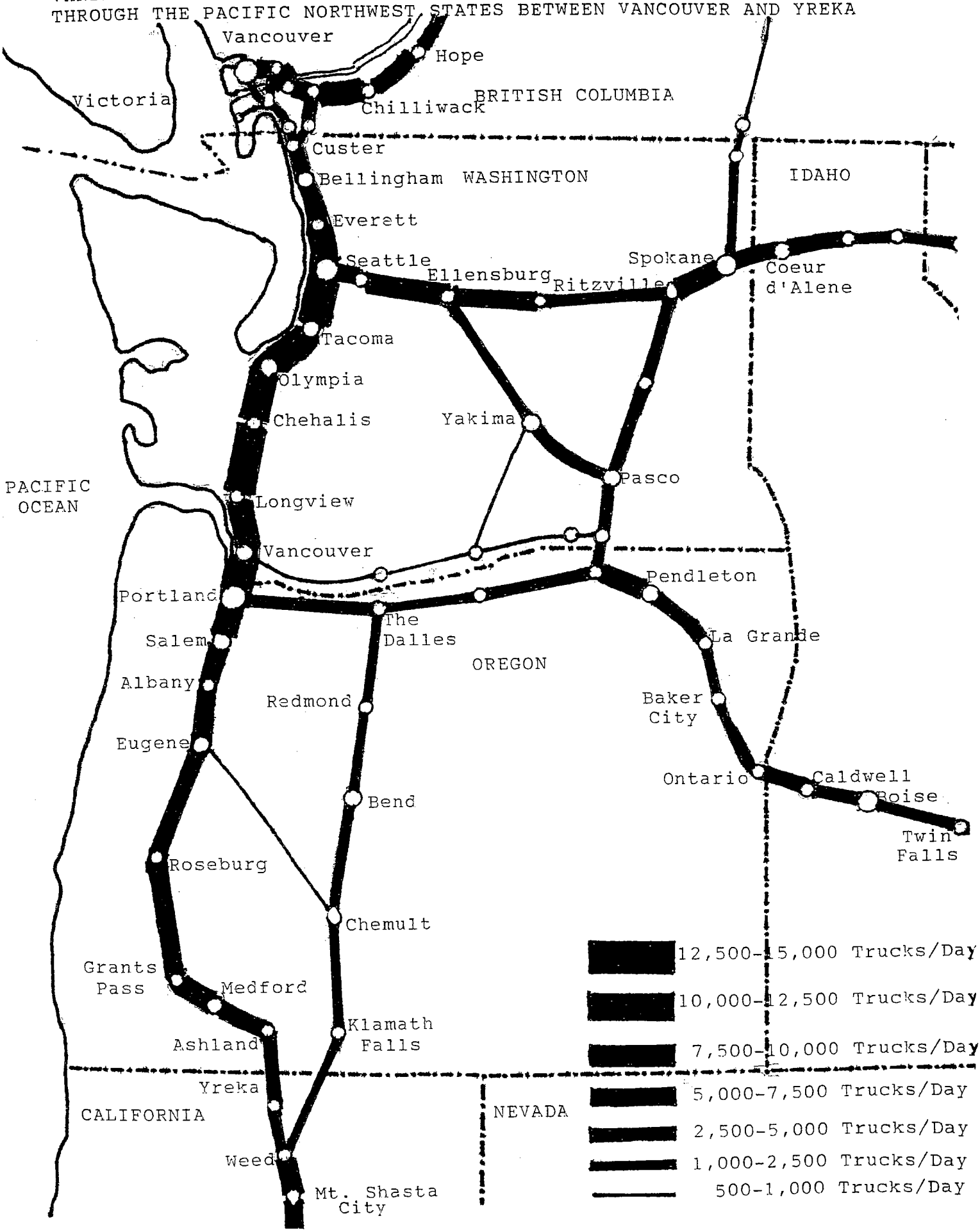
TRAFFIC VOLUMES

OBSERVED VARIATIONS IN TOTAL TRUCK TRAFFIC VOLUMES ALONG THE WEST COAST ROUTE

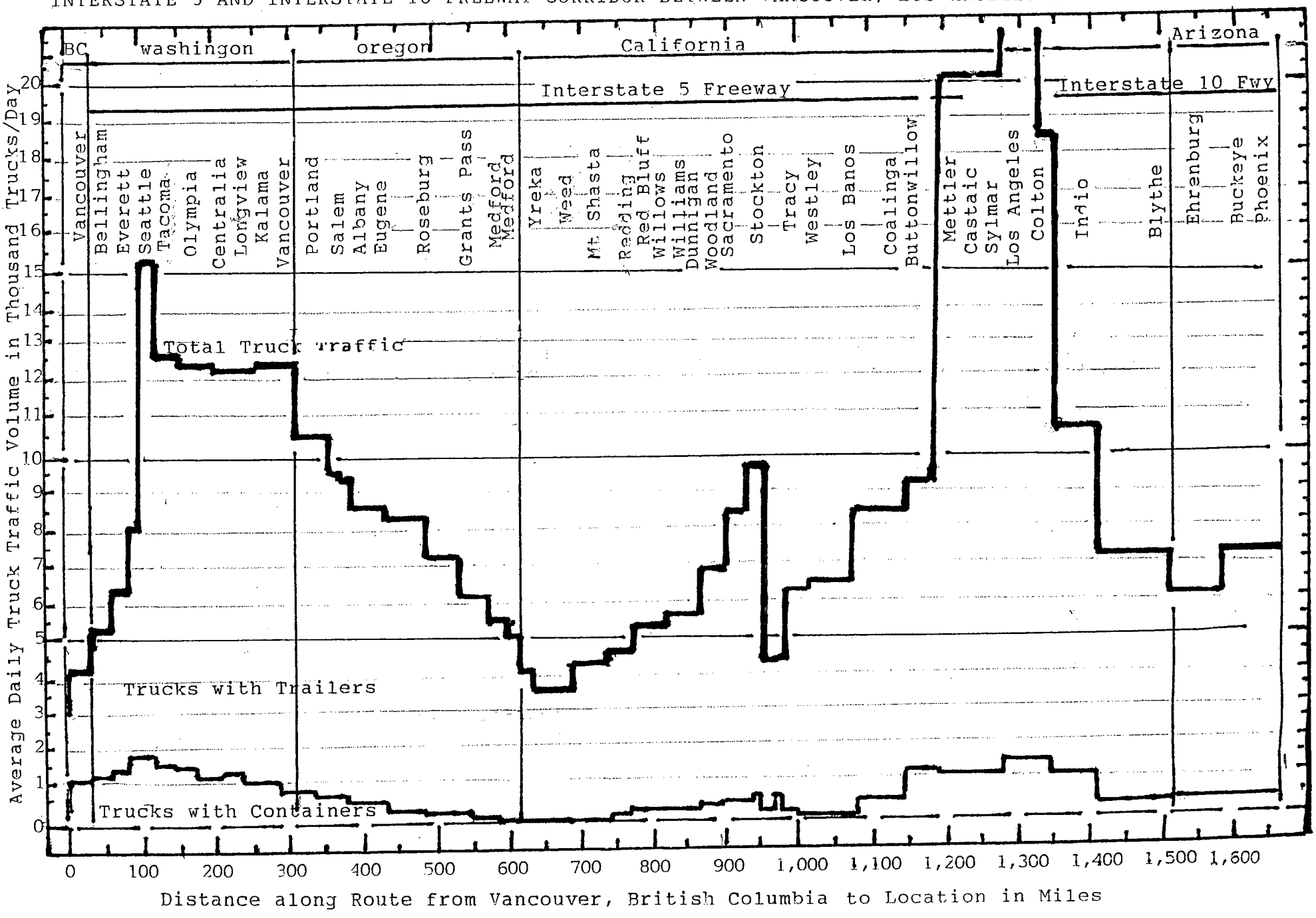



TRUCK TRAFFIC VOLUMES ON THE MAJOR HIGHWAYS IN THE SAN JOAQUIN VALLEY
Traffic Volumes are Reported in Trucks per Day on an Average for the Year 2001 with direct counts by author
Willows
5,400
Williams
Reno
Dunnigan
6,825
Auburn
Roseville
Sacramento
Vacaville
10,150
Vallejo
8,400
10,500
Oakland
Stockton
San Francisco
Tracy
10,350
Westley
Modesto
Redwood City
6,775
San Jose
6,775
Merced
Los Banos
9,765
Gilroy
Madera
Salinas
Fresno
Soledad
6,300
Hanford
Visalia
King City
Coalinga
Avenal
8,370
9,850
San Ardo
Paso Robles
McFarland
Lost Hills
San Luis Obispo
Buttonwillow
Bakersfield
Santa Maria
9,045
11,185
Mojave
Mettler
Wheeler Ridge
20,230
Lancaster
Buellton
Santa Barbara
Palmdale
Castaic
Ventura
Los Angeles

VARIATIONS IN TRUCK TRAFFIC VOLUMES ALONG THE INTERSTATE 5 FREEWAY THROUGH THE PACIFIC NORTHWEST STATES BETWEEN VANCOUVER AND YREKA



OBSERVED TRENDS IN THE TOTAL TRUCK TRAFFIC VOLUMES AND CONTAINER TRUCK VOLUMES ALONG THE INTERSTATE 5 AND INTERSTATE 10 FREEWAY CORRIDOR BETWEEN VANCOUVER, LOS ANGELES AND PHOENIX



SUMMARY OF CONTAINER AND TRUCK TRAFFIC VOLUMES ALONG THE WEST COAST INTERSTATE FREEWAY CORRIDORS BY RANKING BASED ON TOTAL TRUCK MOVEMENTS

Intercity Corridor	Interstate Highway	Distance (Miles)	Containers (Trucks/day)	Trailers (Trucks/day)	Total Trucks (Trucks/day)	Percent of Total
Sylmar-Mettler	I-5	65	1,045	19,185	20,230	5.17
Seattle-Olympia	I-5	60	1,230	11,520	12,750	9.65
Longview-Portland	I-5	45	815	11,735	12,550	6.49
Centralia-Longview	I-5	50	1,065	11,535	12,450	8.55
Olympia-Centralia	I-5	25	1,165	11,235	12,400	9.40
Hayward-Tracy	I-580	30	1,150	10,870	12,020	9.57
Mettler-Bakersfield	SR-99	25	500	10,685	11,185	4.47
Colton-Indio	I-10	70	1,065	9,540	10,605	10.04
Portland-Salem	I-5	40	800	9,710	10,510	7.61
Sacramento-Vallejo	I-80	60	1,450	8,700	10,150	14.28
Bakersfield-Fresno	SR-99	115	180	9,670	9,850	1.82
Stockton-Fresno	SR-99	115	375	9,390	9,765	3.84
Mettler-Buttonwillow	I-5	40	545	8,500	9,045	6.03
Salem-Eugene	I-5	60	550	7,950	8,500	6.47
Stockton-Sacramento	I-5	45	400	8,000	8,400	4.76
Coalinga-Buttonwillow	I-5	75	140	8,230	8,370	1.67
Tracy-Stockton	I-205	25	575	7,750	8,325	6.91
Eugene-Roseburg	I-5	80	100	8,150	8,250	1.21
Roseburg-Grants Pass	I-5	65	50	7,300	7,350	0.68
Blythe-Indio	I-10	95	320	6,730	7,050	4.54
Dunnigan-Sacramento	I-5	35	200	6,625	6,825	2.93
Westley-Coalinga	I-5	110	210	6,150	6,360	3.30
Seattle-Ellensburg	I-90	75	1,800	4,280	6,080	29.61
Blythe-Tonopah	I-10	70	330	5,730	6,060	5.45
Marysville-Burlington	I-5	25	1,480	4,440	5,920	25.00
Dunningan-Red Bluff	I-5	85	150	5,250	5,400	2.78
Burlington-Bellingham	I-5	25	1,400	3,750	5,150	27.18
Ellensburg-Vantage	I-90	40	980	3,920	4,900	20.00
Red Bluff-Redding	I-5	25	75	4,675	4,750	1.50
Trac y-Wesley	I-580	15	575	3,935	4,510	12.75
Belingham-Vancouver	I-5	15	1,080	2,950	4,040	26.80
Redding-Siskiyou	I-5	120	0	4,000	4,000	0.00
Grants Pass-Siskiyou	I-5	60	0	4,000	4,000	0.00
Urban Corridors	--	305	1,125	15,230	16,405	7.15
TOTAL CORRIDORS	--	2,270	635	8,505	9,140	6.95

Based on actual truck traffic counts by the author in 2001.

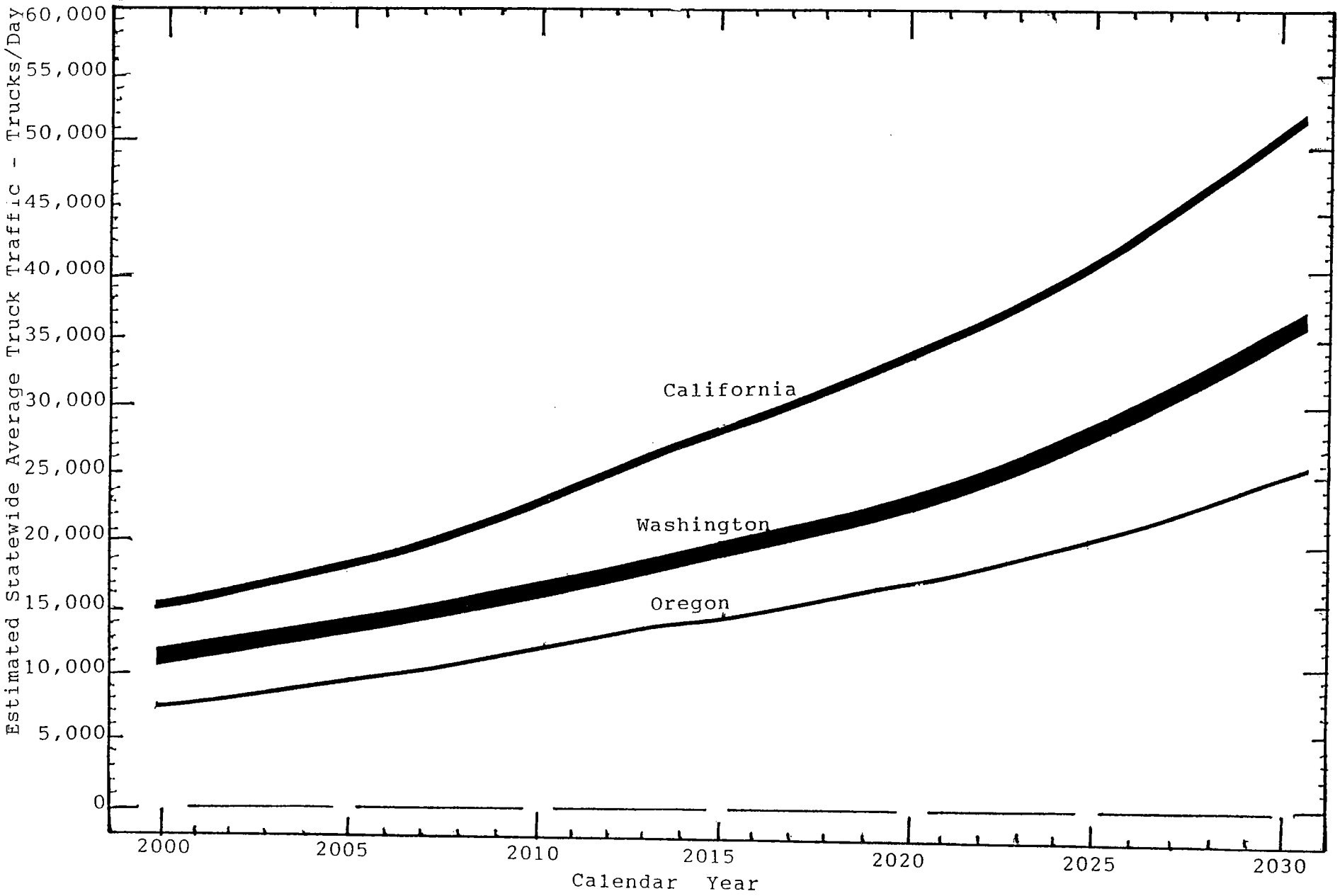
HIGHWAY MAINTENANCE

COST BURDENS

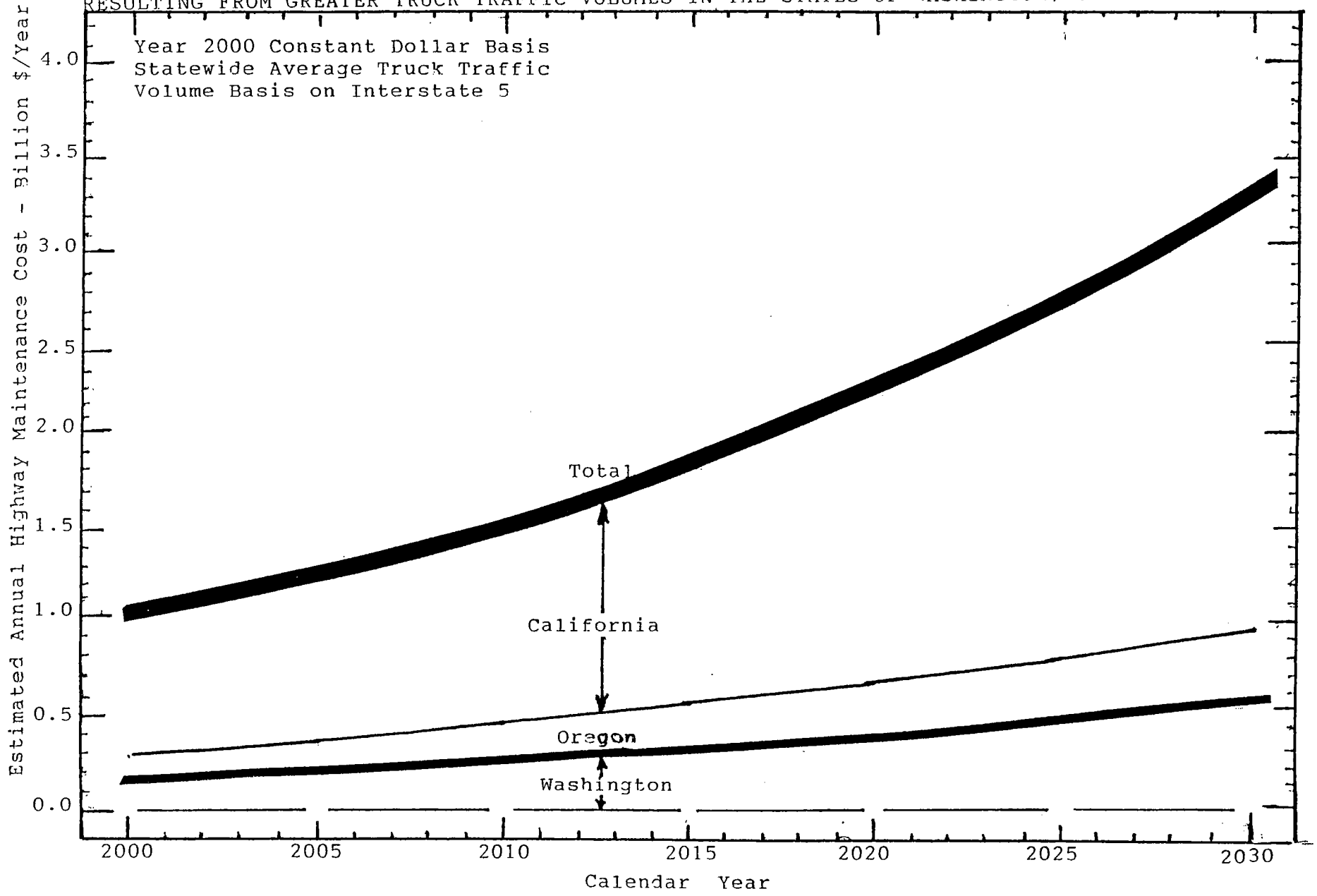
ESTIMATED INCREASES IN THE AVERAGE STATEWIDE TRUCK TRAFFIC VOLUMES ALONG THE INTERSTATE-5 FREEWAY THROUGH THE PACIFIC COAST STATES

Calendar Year	Washington Trucks/Day	Oregon Trucks/Day	California Trucks/Day	Average Trucks/Day
2000	10,855	7,645	15,445	12,895
2005	13,260	9,340	18,840	15,725
2010	16,195	11,405	23,010	19,210
2015	19,780	13,930	28,105	23,460
2020	22,160	17,015	34,330	28,655
2025	29,505	20,780	41,930	34,995
2030	36,040	25,380	51,210	42,745

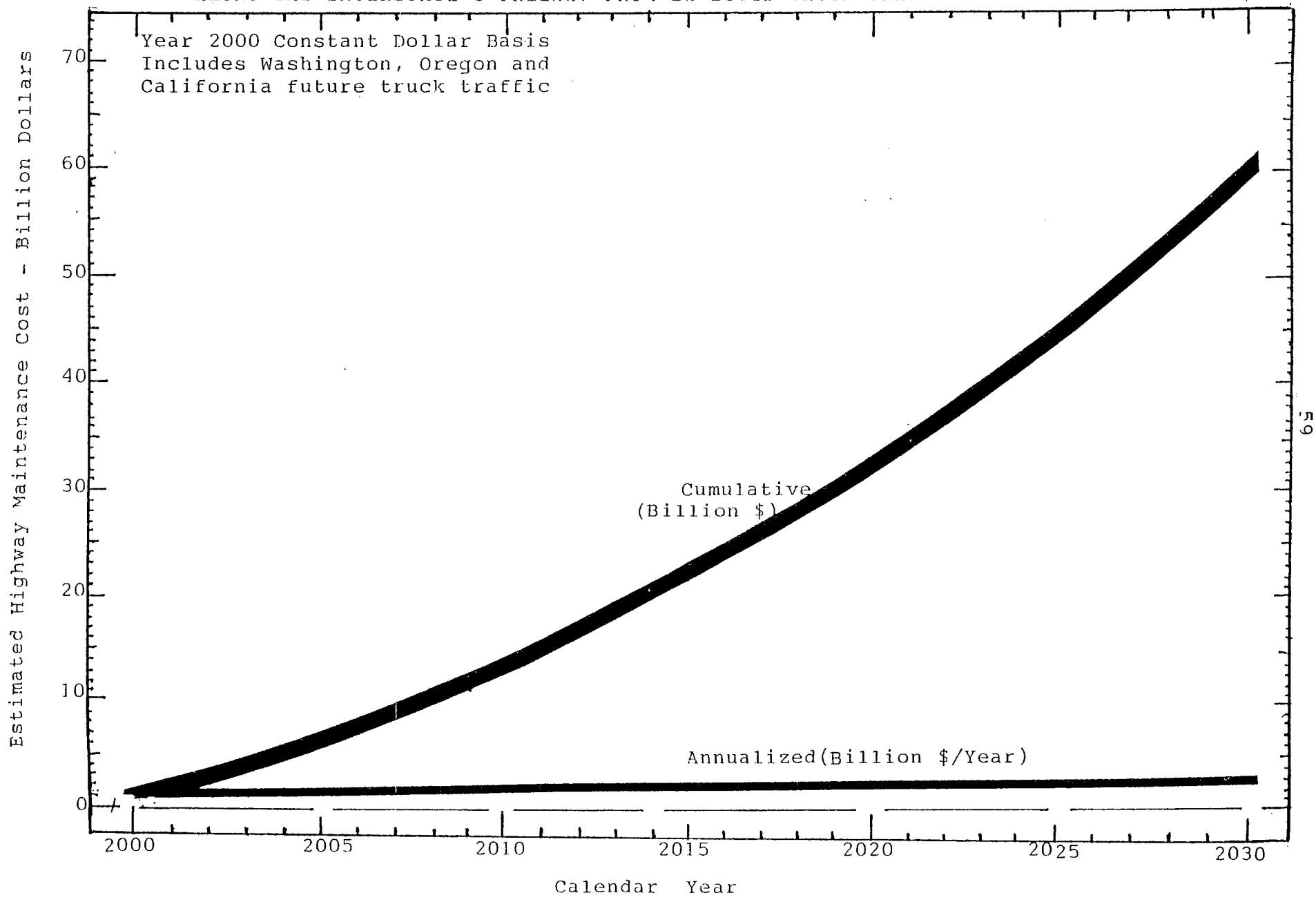
ESTIMATED INCREASES IN THE OVERALL AVERAGE STATEWIDE TRUCK TRAFFIC VOLUME TO BE EXPECTED ALONG THE INTERSTATE 5 FREEWAY THROUGH WASHINGTON OREGON AND CALIFORNIA FROM 2000 TO 2030



ESTIMATED INCREASES IN THE HIGHWAY MAINTENANCE COST BURDEN ALONG THE INTERSTATE 5 FREEWAY RESULTING FROM GREATER TRUCK TRAFFIC VOLUMES IN THE STATES OF WASHINGTON, OREGON & CALIFORNIA



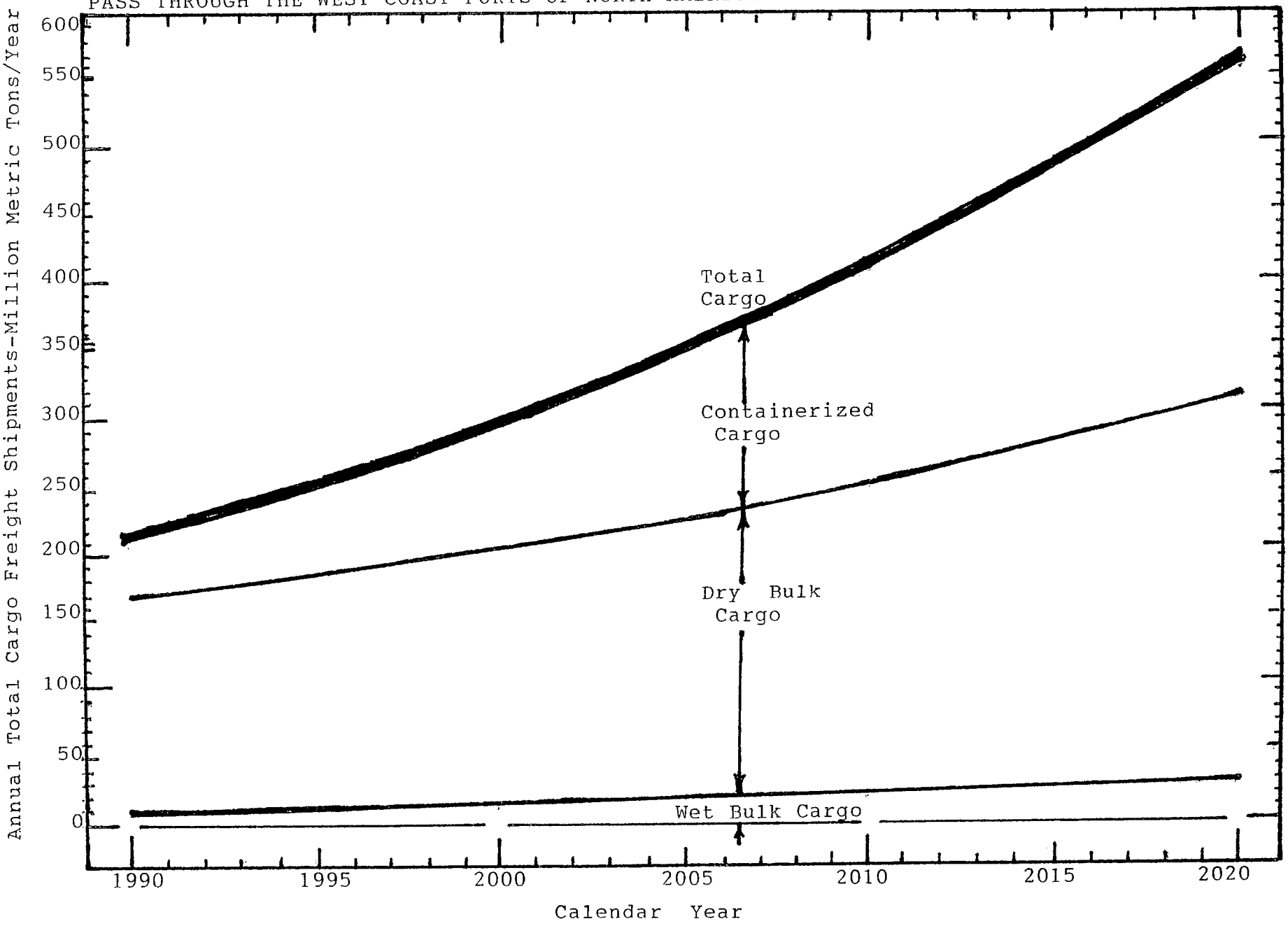
ESTIMATED INCREASES IN THE ANNUALIZED AND CUMULATIVE HIGHWAY MAINTENANCE COST BURDENS ALONG THE INTERSTATE 5 FREEWAY FROM EXPECTEL TRUCK TRAFFIC GROWTH PATTERNS



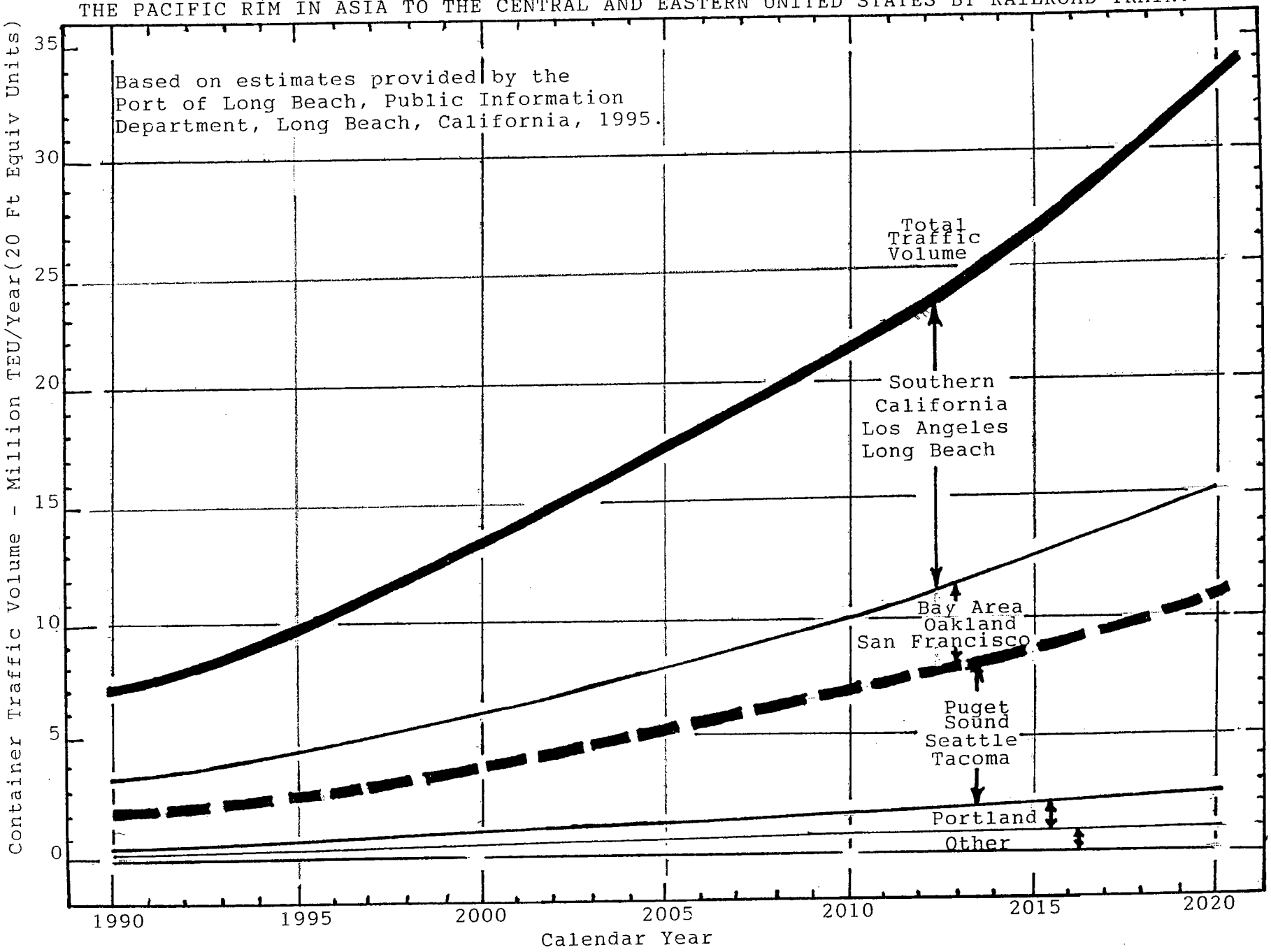
PACIFIC COAST

PORT TRAFFIC

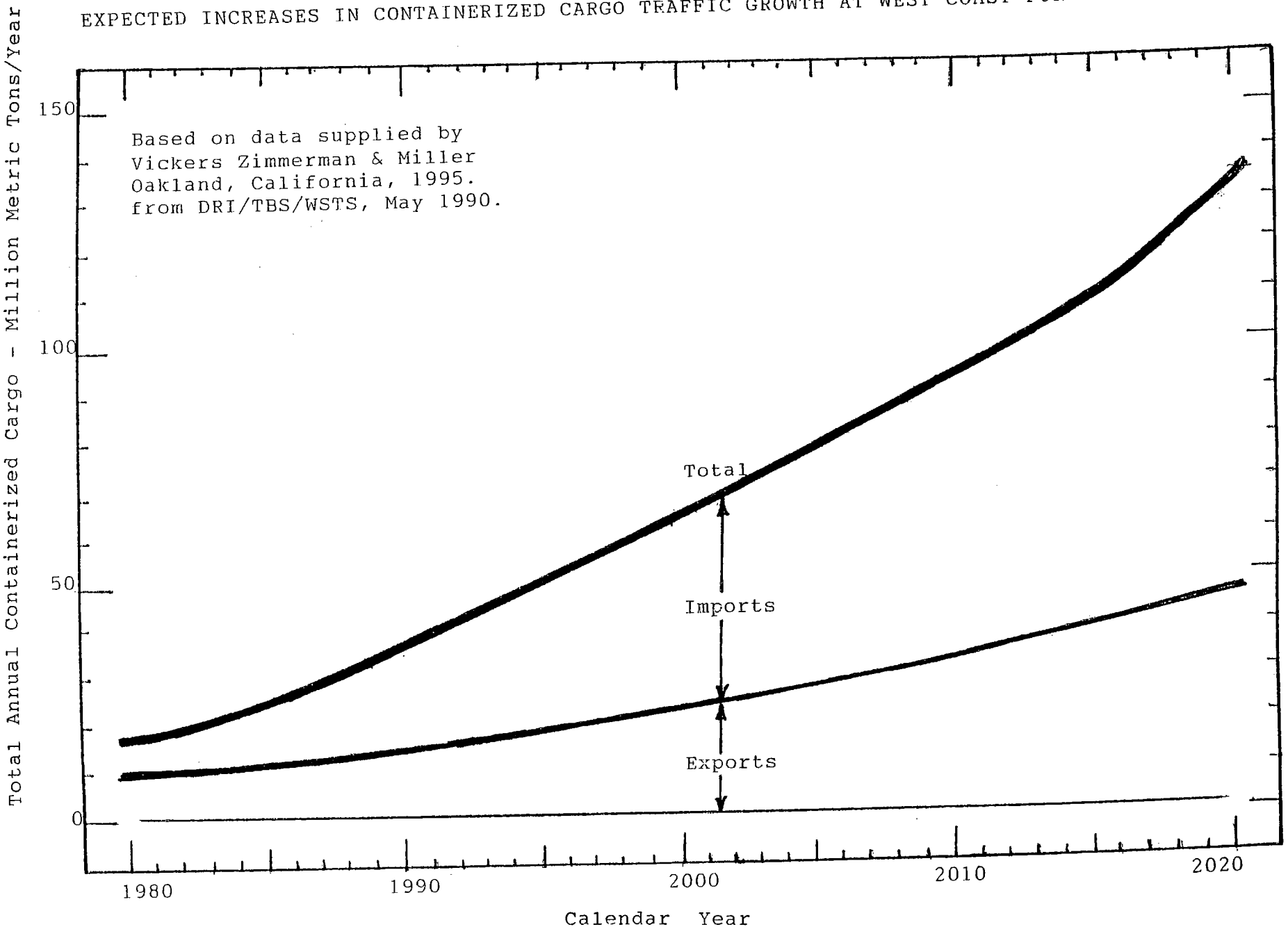
EXPECTED INCREASES IN THE TOTAL CARGO SHIPMENT QUANTITIES BY CATEGORY OF MATERIAL WHICH PASS THROUGH THE WEST COAST PORTS OF NORTH AMERICA BETWEEN THE YEARS OF 1990 TO 2020



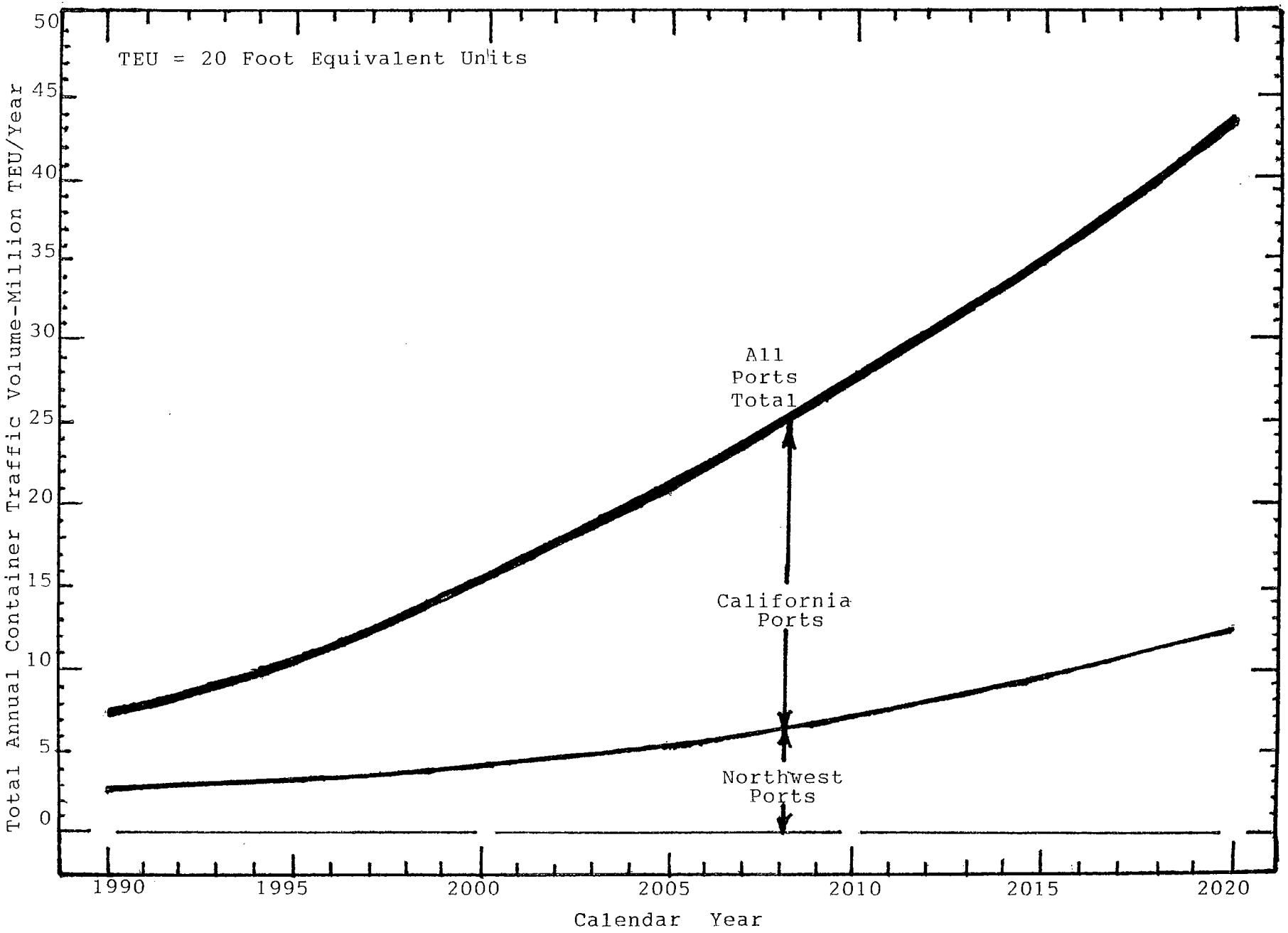
EXPECTED INCREASES IN CONTAINER TRAFFIC VOLUMES PASSING THROUGH WEST COAST PORTS FROM THE PACIFIC RIM IN ASIA TO THE CENTRAL AND EASTERN UNITED STATES BY RAILROAD TRAIN.



EXPECTED INCREASES IN CONTAINERIZED CARGO TRAFFIC GROWTH AT WEST COAST PORTS: 1980-2020.



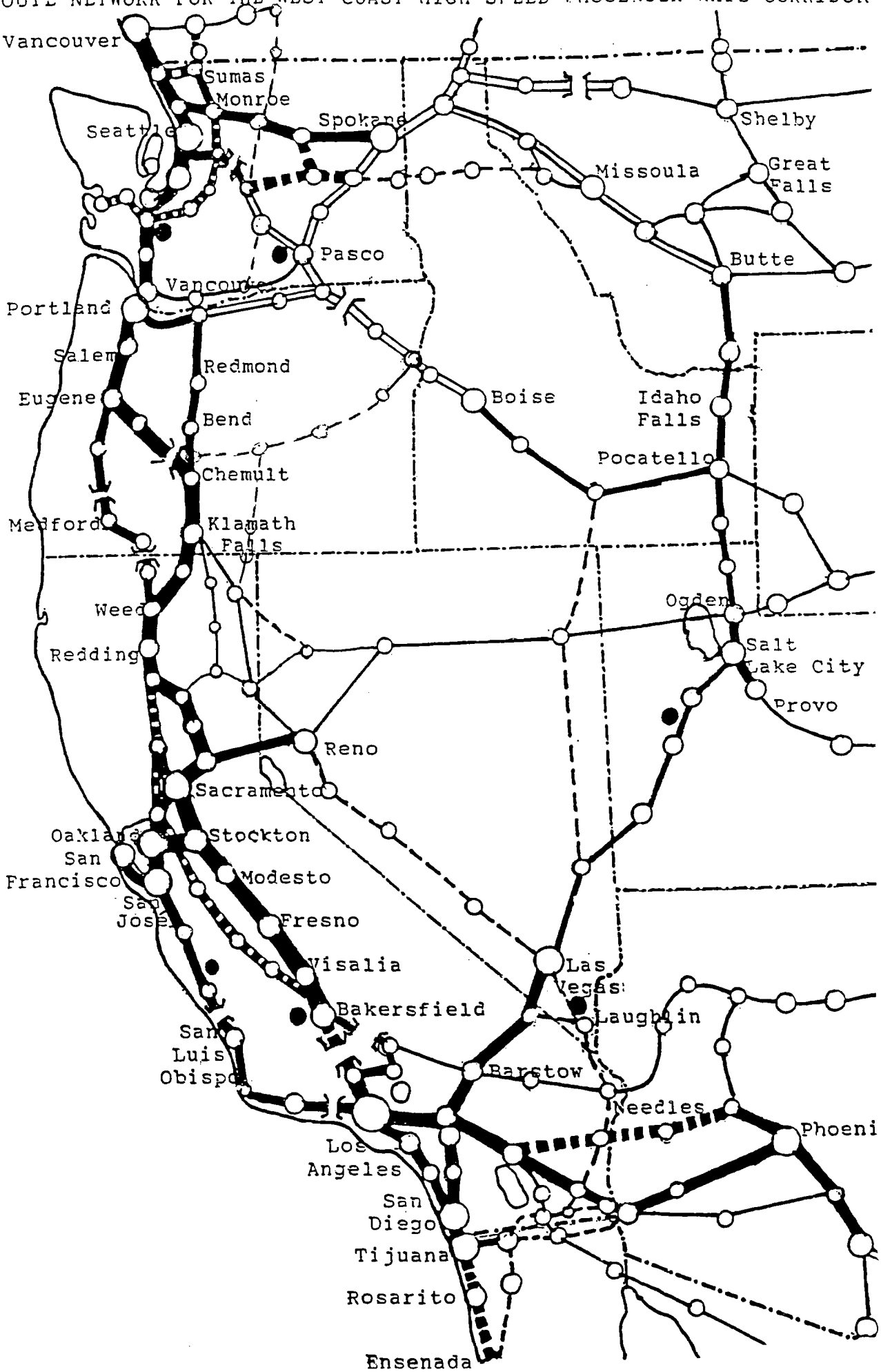
EXPECTED INCREASES IN CONTAINER TRAFFIC VOLUMES AT THE WEST COAST PORTS FROM 1990 TO 2020



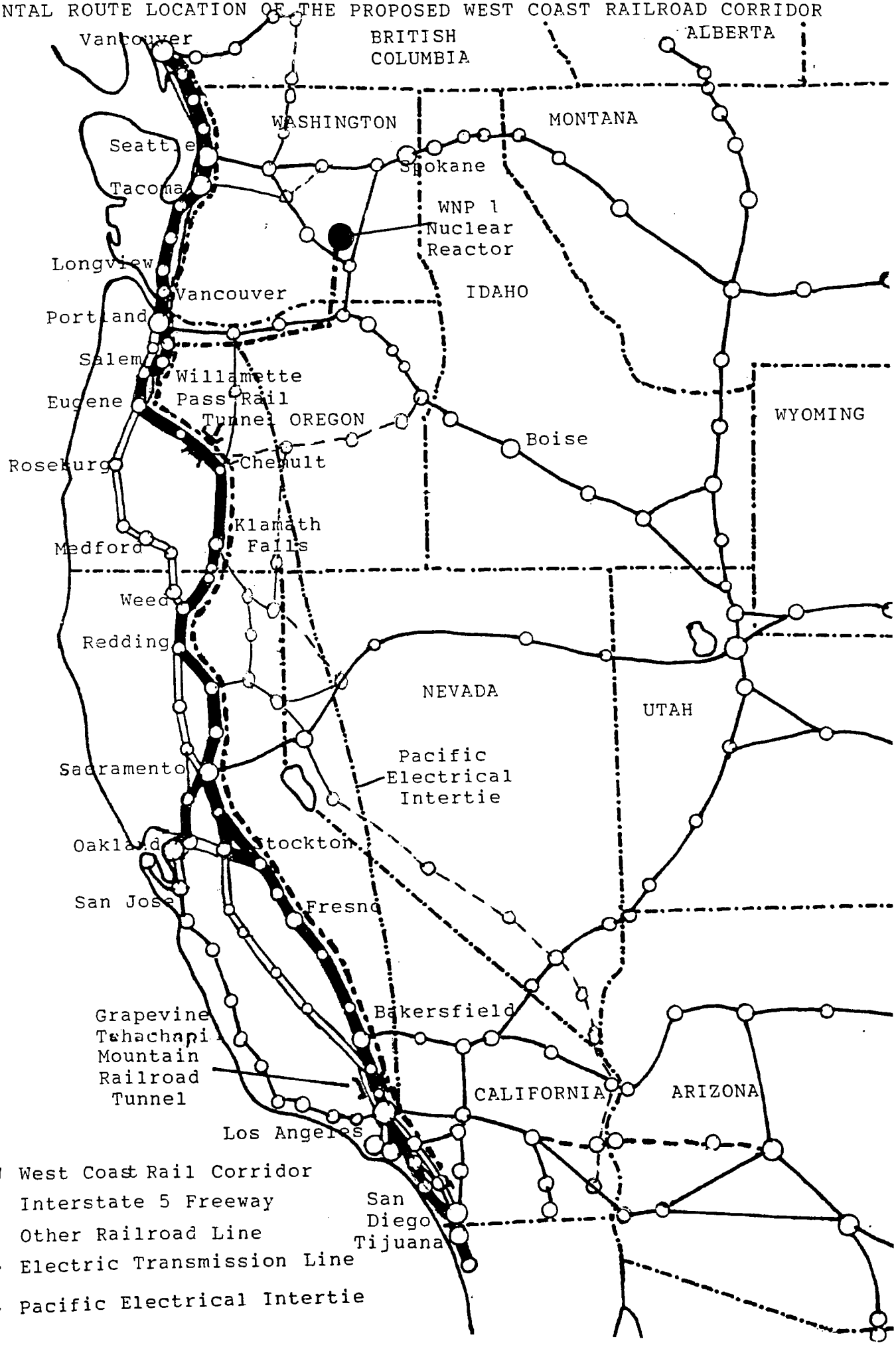
WEST COAST

RAILROAD NETWORK

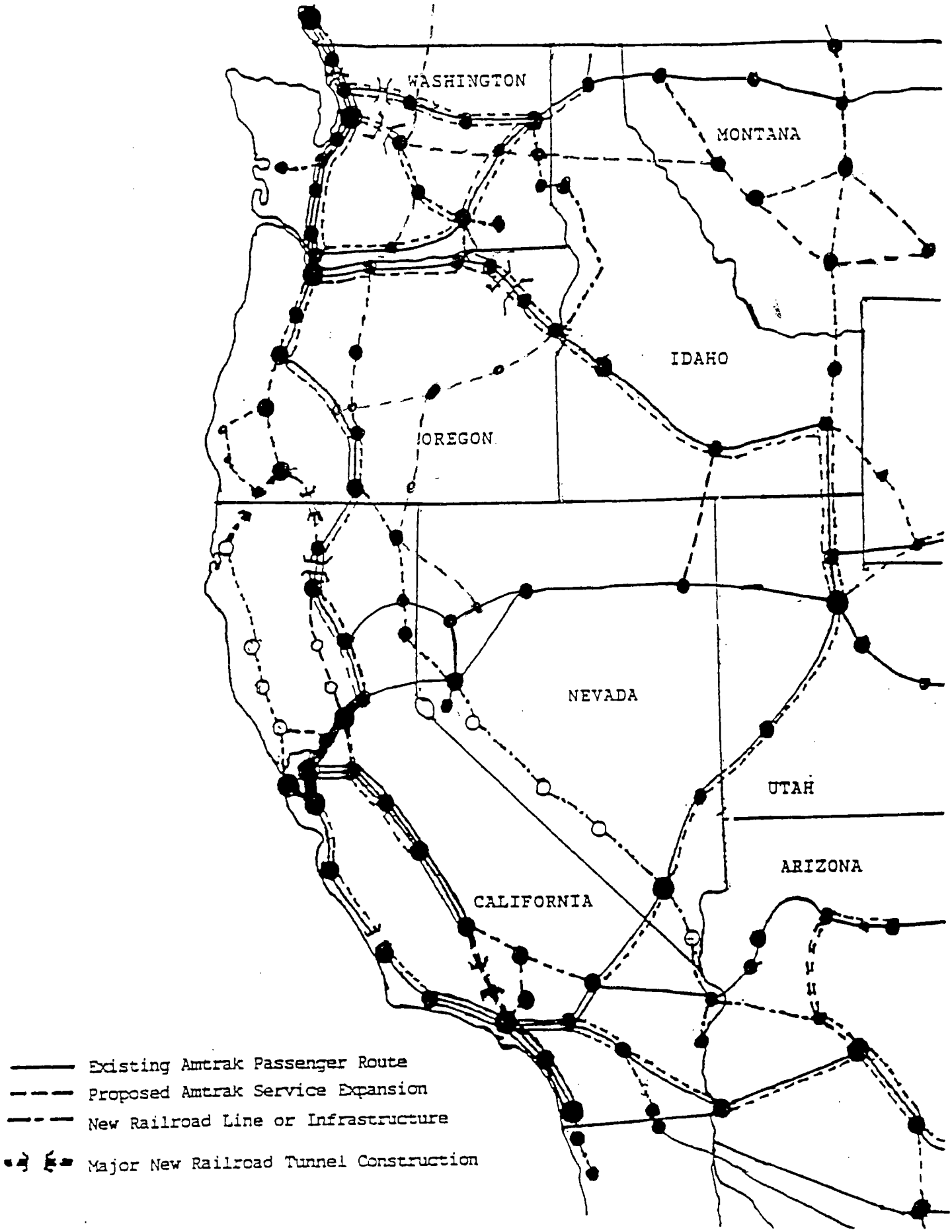
PROPOSED ROUTE NETWORK FOR THE WEST COAST HIGH SPEED PASSENGER RAIL CORRIDOR



HORIZONTAL ROUTE LOCATION OF THE PROPOSED WEST COAST RAILROAD CORRIDOR



PROPOSED ROUTE NETWORK FOR AN INTERCITY RAIL PASSENGER SYSTEM ON THE WEST COAST



PROPOSED ROUTING OF THE HIGH SPEED RAIL CORRIDOR NETWORK IN CALIFORNIA